

RELATIONSHIPS: PARENTAL MIND-MINDEDNESS AND INFANT OUTCOMES,  
AND HOW PARENTS EXPERIENCE BUILDING A RELATIONSHIP WITH THEIR  
BABY ON NEONATAL INTENSIVE CARE

By

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Volume I

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## **Thesis Overview**

This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of Clinical Psychology at the University of Birmingham. The thesis comprises of two volumes. All identifying information has been anonymised for confidentiality.

### **Volume I**

This volume comprises three chapters. Chapter 1 is a systematic literature review of how parental mind-mindedness in the first year of a child's life links to outcomes in pre-school aged children. Chapter 2 is a qualitative evaluation of how parents find building a bond with their baby, when their baby is on the neonatal intensive care unit. Chapter 3 is a public domain briefing document.

### **Volume II**

This volume contains four clinical practice reports (CPRs) and the abstract of a fifth which was presented orally. The first CPR presents the case of a 27 year old female with a learning disability who was pregnant and experiencing low mood, formulated from a cognitive behavioural and psychodynamic perspective. The second CPR is a service evaluation of staff views of a recent consultation process. The third CPR is a single case experimental design of an 18 year old woman diagnosed with obsessive-compulsive disorder, using a cognitive behavioural formulation and exposure response prevention. The fourth CPR is a case study of an 83 year old who suffering from post-traumatic stress disorder (PTSD) using a cognitive behavioural formulation and intervention. The fifth is the abstract of an orally presented case describing a 16 year old female with PTSD.

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**Does parental mind-mindedness in the first year of a child's life  
link to outcomes in pre-school aged children?**

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## **Abstract**

**Background:** Mind-mindedness (MM, Meins, 1997; Meins, Fernyhough, Fradley, & Tuckey, 2001) is defined as a parents ability to appropriately comment on what their infant is thinking or feeling (Meins, 2013). Research has found that MM may be a more consistent predictor of attachment security (Meins et al., 2001) than caregiver sensitivity (De Wolff, & Van IJzendoorn, 1997; Meins et al., 2001).

**Aim:** To collate the available literature, review the quality of the literature and to assess whether there is an association with MM and different developmental outcomes before the child starts year one at school.

**Method:** A systematic search of three electronic databases was conducted to identify research focussing on the longitudinal effects of MM on infant developmental outcomes. 159 papers were screened against an inclusion and exclusion criteria checklist resulting in a total of 20 papers for the final review. Papers were all assessed for quality before inclusion in the results.

**Results:** Results showed that MM significantly predicted outcomes of infant attachment security, ToM, cognitive and language development, sleep, feeding and internalising and externalising behaviours but the results were not conclusive. MM appeared to be more significant than caregiver sensitivity but the literature is still unsure if MM is a pre-requisite to caregiver sensitivity or whether they are independent constructs. MM was found to be a stable construct over time.

**Conclusion:** MM is a relatively new concept and more research is required, including assessing the influences on older children's outcomes. Due to the short assessment time of MM, it could be useful in predicting child outcomes in at risk infants. More research is needed.

## **Introduction**

Attachment theory (originally developed by Bowlby, 1988) postulates that attachment behaviours are genetically programmed, and can be observed from birth onwards, with more stable and specific attachment styles and patterns developing between 6 months and 3 years of age (Bowlby, 2005). The first year of life is important in the baby's psychological development (Zeanah, Boris, & Larrieu, 1997) and basic trust is formed between infant and caregiver (Corriveau et al., 2009). Securely attached children have experienced parents/caregivers who were consistently attuned and responsive to their infants' needs, and are subsequently confident to explore the world and advance their learning and development (Bowlby, 1988). A secure attachment is critical as it is known to impact on differing aspects of a child's development (Oppenheim, Koren-Karie, & Sagi-Schwartz, 2007).

Caregiver<sup>1</sup> sensitivity is a parental way of being with an infant and is described as a pre-requisite to an infant forming a secure attachment (Ainsworth, Bell, & Stayton, 1971). Ainsworth (1963) developed the concept of caregiver sensitivity by observing infants and caregivers in Uganda and she contributed to the understanding that an infant's secure attachment was significantly and positively correlated with caregiver sensitivity (Sharma, 2011). Sensitivity is defined as the caregivers' ability to understand the signals from their infant and to respond appropriately (Ainsworth et al., 1971). A caregiver less sensitive to their infant's needs is less able to interpret the cues correctly and misses the infant's underlying signals. Caregiver sensitivity is not just the ability to respond to the infant but to evaluate why the infant is displaying that behaviour and respond in an attuned manner (Meins et al., 2001). Caregivers who do not respond sensitively may be unwilling, or unable to distinguish why the

---

<sup>1</sup> Caregiver is used as a general term to encompass mothers, fathers and other primary caregivers

infant is displaying that behaviour, so respond in a way that is not attuned and is not meeting the infant's needs (Meins et al., 2001).

A meta-analysis assessing caregiver sensitivity and infant attachment security (De Wolff, & Van IJzendoorn, 1997) found that subsequent studies have not consistently replicated Ainsworth's (1971) findings of the strength of the relationship between caregiver sensitivity and attachment security in the infant, especially in distinguishing between insecure avoidant and resistant categories. De Wolff, & Van IJzendoorn, (1997) reported that there were a number of caregiver behaviours that predicted an infant's secure attachment and parental sensitivity was not the only component in creating infant's attachment security. Ainsworth's original assessment for caregiver sensitivity was longitudinal in nature which included multiple observations of the interaction between mothers and infants (Ainsworth et al., 1971) over set time points, but it has been shortened for ease of use in research and clinical settings (Meins, 2013). The consequence in shortening the length of assessment is the loss of the original focus on the appropriateness of the response from the caregiver (Meins et al., 2001), which may explain why the research has conflicting results on the link between caregiver sensitivity and infant attachment security (Meins, 2013).

Meins et al., (2001) hypothesised that caregiver behaviours linked to infants' mental states will be more useful and easier to operationalise than the generalised construct of maternal sensitivity. Mind-mindedness (MM) is defined as the "caregivers proclivity to treat their infant as an individual with a mind, rather than merely as a creature with needs that must be satisfied" (Meins, 1997; Meins et al., 2001, p. 638). MM is a term that describes the way in which a carer views their infant from the first year of their life and whether the carer is able to appropriately 'tune in' to what the infant may be thinking and feeling (Meins, 2013). Mind-related comments focus on the infant's desires and preferences, cognitions, emotions,

epistemic states and talking on the infants behalf (Meins et al., 2001). If the carer responds to an infant's signal in a way that is not 'in tune', such as trying to feed them when they cried due to being scared, they are described as making non-attuned mind-related behaviour (Meins, 2013).

MM is operationalised and assessed by a carer's ability to focus on an infant's mental characteristics and to attribute meaning to their infants early non-word utterances or comment in an attuned manner on their infants internal states during free-play (Meins, 1997; Meins & Fernyhough, C., 2015; Meins et al., 2001; Meins, Fernyhough, C., Russell, J., & Clark-Carter, D., 1998) or when describing their infant in an interview (12 months plus, "can you describe your child for me?", Meins & Fernyhough, C., 2015; Meins et al., 1998). Initially the observational measure for MM contained five areas (caregiver responsiveness to change in infant's direction of gaze, caregiver responsiveness to infant's object-directed action, imitation, encouragement of autonomy and mind-related comments) but only appropriate mind-related comments were found to be significant predictors of infant attachment security longitudinally (Meins et al., 2001).

Understanding the mechanisms which support a secure attachment development is vital (Meins et al., 2012) and has the potential to form the basis of interventions for groups of people that are at risk of developing an insecure attachment style. In Meins et al., (2001) original study they found that the mothers who made more appropriate mind-related comments, when the infant was 6 months old, was predictive of the infants' subsequent attachment security. Caregivers who used less appropriate mind-related comments were more likely to have infants with an insecure attachment style (Meins et al., 2001). This was the first indication that the concept of MM could be used to predict infant attachment as a developmental outcome.

Since Meins (1997) coined the term MM, the focus of the literature has progressed from establishing the definition and its validity, to try to understand the relationship that it has on or with an infant's developmental outcomes (Meins, 2013; Meins & Fernyhough, C., 2015). Meins et al., (2001) found that both MM and caregiver sensitivity were independent predictors of attachment security, but MM had a stronger relationship, and it was hypothesised that MM could have an effect on other infant developmental outcomes. There has not been a systematic review of the literature to assess whether there is any association between MM and different infant outcomes including attachment security. The aim of this systematic review is to collate the available literature, review the quality of the literature and to assess whether there is an association with MM and different developmental outcomes before the child starts year one at school.



## **Method**

### ***Search Strategy***

Mind-mindedness as a concept was coined by Meins in 1997 and this review will focus on literature following Meins et al., (2001). The interview and observation method of assessing MM (Meins et al., 2001) are the only two validated measures and have been used in the majority of MM research, consequently only studies using these two methods of assessment will be included. The search looked for research assessing the association between MM and any outcomes for an infant of 6 of age years or younger (before starting year one at school). Only longitudinal design studies only were included to ensure retrospective measurement of MM was excluded and validity for MM's effect on infants' developmental outcome could be increased.

Three electronic databases were searched: PsycInfo (1967 to March Week 3 2017), Embase (1974 to 2017 March 24) and Ovid MEDLINE (1946 to March Week 3 2017). To try to ensure that all relevant research was captured, a keyword search was used including the terms of "mind-mindedness" and "mind mindedness" including the title, abstract and subject headings. Backward searching was used on papers that met the inclusion criteria for the review to identify papers not captured by the original database.

A total of 159 results were identified from the above searches. Abstracts of those papers identified from the initial searches were reviewed and where the focus of the paper was relevant to the literature review, full texts were obtained for further inspection. The inclusion and exclusion criteria applied to these papers are listed in *Table 1*. After application of the inclusion and exclusion criteria a total of 19 papers were included for review, with backward

searching identifying one additional paper (Lundy, 2003). In total 20 papers were included for full final review see *Figure 1*.

*Table 1 Inclusion and exclusion criteria for the systematic search*

| Inclusion Criteria  | Exclusion criteria              |
|---|---------------------------------|
| Journal article, published in English   | MM not measured                 |
| Empirical study investigating the association of MM and infant's outcomes     | MM measured retrospectively     |
| Study was longitudinal in nature  | Study was on adults             |
| Infants and children <6 years old   | Review papers                   |
| MM assessed using either of the two measures of MM (Observation or interview) | MM measured retrospectively     |
|   | Paper was published before 2001 |

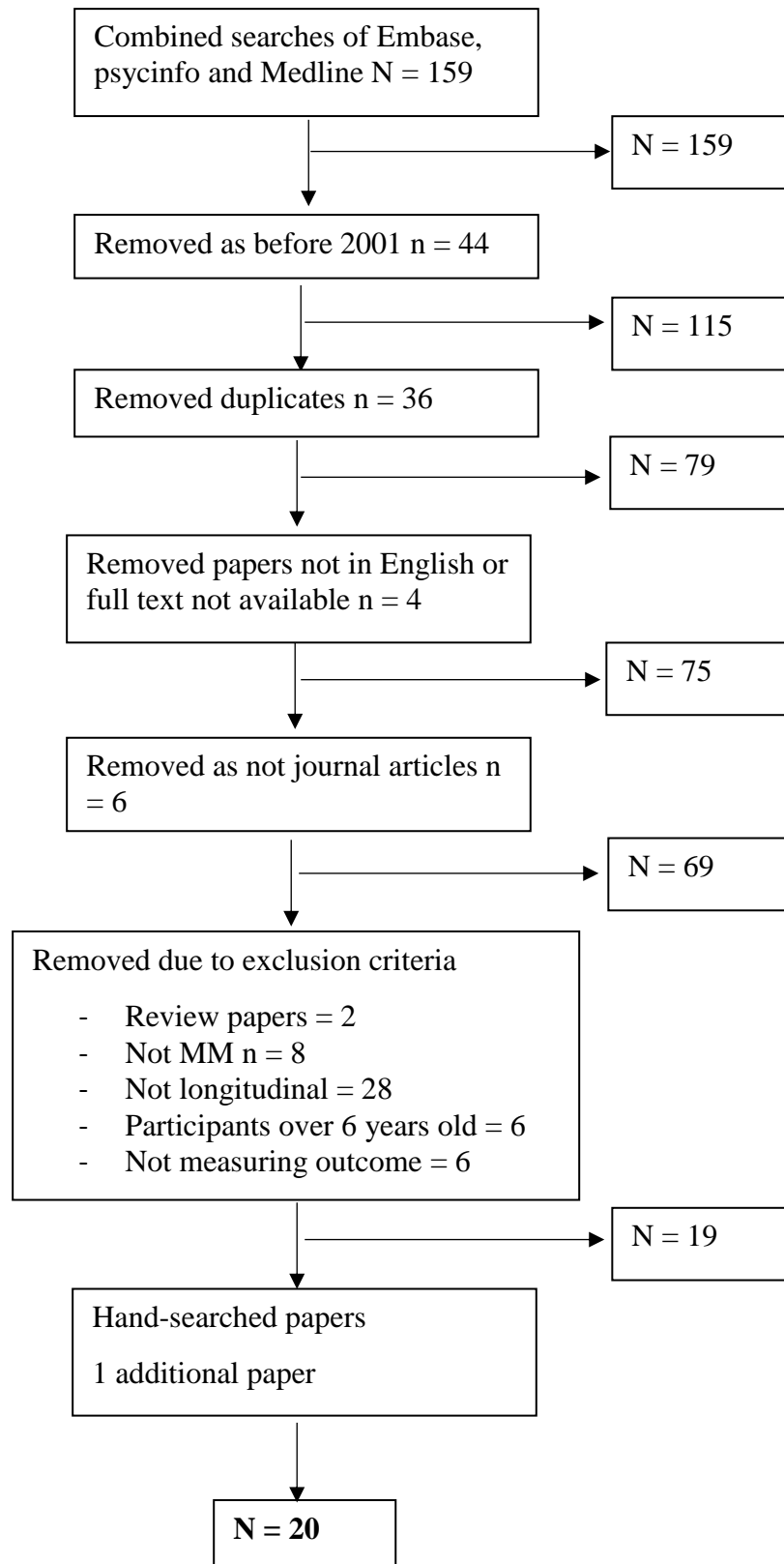


Figure 1 Criteria and procedure for exclusion of items returned by the search

## ***Demographics***

Across the 20 papers, there were 1,976 mother-infant dyads, with 49 triads including the father. The smallest number of participants for a paper was 18 (Kirk et al., 2015) and the largest was 253 (McMahon, Camberis, Berry, & Gibson, 2016). The average age of the mothers was 30.2 years old (range 16-45), fathers was 34.8 years old (range 24-56). The average age of initial MM assessment of the infant was 9 months (range 3-12). Half of the studies were conducted in the United Kingdom (10) with 7 from Canada, and 1 from Australia, Germany and the USA.

Two studies used the interview assessment of MM and 19 of studies used the observation method (with one using both). All studies used a second assessor for rating MM for at least 10% of the participants with inter-rater reliability ranging from  $\kappa$ 0.70-0.95 with an average of  $\kappa$ 0.8. The number of studies relating to each outcome is displayed in *Table 4*.

### **Quality assessment**

All papers were reviewed for quality and risk of bias using an observational longitudinal quality framework by Tooth, Ware, Baln, Purdle, & Dobson, (2005). This quality framework was chosen as it specifically assesses longitudinal observational design. The focus of the quality framework is on the quality of the reporting of the study rather than the research quality per se (Tooth et al., 2005). Tooth et al., (2005) suggest that if the quality of reporting is improved, researchers may think more carefully in designing and analysing their results, having a positive impact on the quality of research produced. The Tooth framework consists of 33 items assessing recruitment, data collection, biases, and data analysis and descriptive issues relevant to study rationale, study population and generalisability (Table 2). The aim of the framework is to assess threats to the internal and external validity of observational longitudinal studies (Tooth et al., 2005). Each item is scored either 1 if the item has been met or 0 if it has not, high scores are indicative of a higher quality of reporting. Tooth et al., (2005) found that on analysing longitudinal observational research, on average papers scored 17 for the quality of their reporting based on the scale.

The quality ratings from the Tooth et al., (2005) study were used to evaluate the respective contributions of the papers in being able to explore the effect MM has on infant developmental outcomes. Ten percent of the papers (n=2) were marked by a second assessor to assess for inter-rater reliability. For items where there was a disagreement in scoring, these were discussed until a consensus was agreed.

*Table 2 Displaying the criteria for each of the quality checklist items (Tooth et al., 2005)*

| Quality criteria |  |    |  |
|------------------|--|----|--|
| 1                | Are the objectives or hypothesis of the study stated?                    | 18 | Was the validity (against a “gold standard”) of measurement methods mentioned? |
| 2                | Is the target population defined?  | 19 | Were any confounders mentioned?  |
| 3                | Is the sampling frame defined?   | 20 | Was the number of participants at each stage specified?                        |
| 4                | Is the study population defined?   | 21 | Were reasons for loss to follow-up quantified?                                 |
| 5                | Are the study setting (venues) and/or geographical location stated?      | 22 | Was the missingness of data items at each wave mentioned?                      |
| 6                | Are the dates between which the study was conducted stated or implicit?  | 23 | Was the type of analyses conducted stated?                                     |
| 7                | Are eligibility criteria stated?   | 24 | Were “longitudinal” analysis methods stated?                                   |
| 8                | Are issues of “selection in” to the study mentioned?                     | 25 | Were absolute effect sizes reported?   |
| 9                | Is the number of participants justified?                                 | 26 | Were relative effect sizes reported?   |
| 10               | Are numbers meeting and not meeting the eligibility criteria stated?     | 27 | Was loss to follow-up taken into account in the analysis?                      |
| 11               | For those not eligible, are the reasons why stated?                      | 28 | Were confounders accounted for in analyses?                                    |
| 12               | Are the numbers of people who did/did not consent to participate stated? | 29 | Where missing data accounted for in the analyses?                              |
| 13               | Are the reasons that people refused to consent stated?                   | 30 | Was the impact of biases assessed qualitatively?                               |
| 14               | Were consenters compared with non-consenters?                            | 31 | Was the impact of biases estimated quantitatively?                             |
| 15               | Was the number of participants at the beginning of the study stated?     | 32 | Did authors relate results back to target population?                          |
| 16               | Were the methods of data collection stated?                              | 33 | Was there any other discussion of generalizability?                            |
| 17               | Was the reliability (repeatability) of measurement methods mentioned?    |    |  |

Table 3 Quality review summarising the quality of reporting within and between the papers

|                          | Quality Criteria (No. related to Table 2) |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    | Total |    |
|--------------------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|----|
| Study                    | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | %     |    |
| McMahon et al., (2016)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 82    |    |
| Meins et al., (2017)     | 1   | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 79    |    |
| Laranjo et al., (2008)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 0  | 1  | 1  | 73    |    |
| Meins et al., (2012)     | 1   | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1     | 67 |
| Arnott & Meins (2007)    | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 67    |    |
| Lundy (2003)             | 1   | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 58    |    |
| Meins et al., (2003)     | 1   | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 73    |    |
| Laranjo et al., (2010)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 0  | 1  | 1  | 70    |    |
| Meins et al., (2002)     | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 67    |    |
| Licata et al., (2013)    | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 64    |    |
| Laranjo et al., (2014)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 61    |    |
| Meins et al., (2013)     | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 58    |    |
| Kirk et al., (2015)      | 1   | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 0  | 1  | 1  | 58    |    |
| Bernier et al., (2010)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1     | 76 |
| Bernier et al., (2017)   | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1     | 76 |
| Laranjo & Bernier (2012) | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 0  | 1  | 1  | 64    |    |
| Bordeleau et al., (2012) | 1   | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1     | 76 |
| Meins et al., (2011)     | 1   | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1     | 73 |
| Meins et al., (2013)     | 1   | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 1  | 0  | 1  | 1  | 1  | 1  | 1  | 1  | 1     | 70 |
| Farrow & blissett (2014) | 1   | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0  | 0  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 1  | 0  | 0  | 0  | 1  | 1  | 1  | 1  | 0  | 1  | 0  | 1  | 1  | 1  | 1  | 1     | 61 |

### ***Quality reporting across studies***

The quality rating reported in *Table 3* were assigned a total percentage of measures met, and all 20 papers exceeded the average of 51.5% (total 17) suggested by Tooth et al., (2005). The poorest quality papers (score of < 58%) in this review were Kirk et al., (2015), Lundy, (2003), Meins et al., (2013). The highest quality (score of 79% >) papers in this review were, Meins, Bureau, & Fernyhough, (2017) and McMahon, Camberis, Berry, & Gibson, (2016). The mean overall average of the quality scores was 68% (Range 58-82%).

All papers sufficiently stated the objective of the studies, target populations, and the study population were defined with the selection in criteria mentioned as women and the age of the infants. In addition, all papers stated the number of participants at the start of each study, described data collection, psychometrics of measure/assessment used, and they all used the 'gold standard' assessment for measuring MM (Meins et al., 2001). All papers stated which statistical analysis and longitudinal analysis was used, however, this could be increased in validity and reduce any ambiguity if the papers were more explicit. Every paper gave an absolute effect size and all of the papers qualitatively assessed biases, related findings back to the target population and mentioned generalisability.

In terms of weaknesses across the papers, none justified the number of participants used or stated the dates when the study took place. None of the studies mentioned the numbers of potential participants that did not meet the eligibility criteria and the reasons why. Only two studies mentioned how many participants refused to consent, with none of them giving any reasons or comparing them to those who did consent. As all the papers demonstrated relatively high levels of reporting, all of the papers will be included in the



results of this review. Specific limitations of each of the studies will be accounted for in the results.

## **Results**

Definitions of the outcomes found in the search are given in Table 4 with the number of contributing studies to each outcome.<sup>2</sup> Table 5 shows the main characteristics and findings of the studies from the systematic review.

### ***Outcome table***

*Table 4 To show the outcomes found by the search and a definition for these outcomes*

| <b>Outcome</b>                             | <b>Number of contributing studies</b> | <b>Definition (or what was measured by the research)</b>   |
|--|---------------------------------------|--|
| Attachment security                        | 5                                     | Securely attached children have experienced parents/caregivers who were consistently attuned and responsive to their infant needs are subsequently confident to explore the world and advance their learning and development (Bowlby, 1988). |
| Theory of mind (ToM)                       | 7                                     | ‘A set of interrelated concepts used to try to make sense of our own mental processes and those of others, including the variability of beliefs and desires’ (Gleitman, Fridlund, & Reisberg, 1999, p. C29)                                  |
| Cognitive development                      | 2                                     | ‘Intellectual growth from infancy to adulthood’ (Gleitman et al., 1999, p. C5)   |
| Language Development                       | 1                                     | The process by which children come to understand and communicate language during early childhood   |
| Sleep                                      | 1                                     | Measured by total percentage of sleep occurring at night   |
| Feeding                                    | 1                                     | Increased duration of breast-feeding and more attuned parenting at meal times resulting in improved feeding preference in the infant   |
| Internalising and externalising behaviours | 2                                     | To see whether parenting behaviours protect against childhood behaviour problems by assessing internalising and externalising child behaviour  |
| Sensitivity                                | 9                                     | Sensitivity is defined as the caregivers ability to understand the signals from their baby and to respond appropriately (Ainsworth et al., 1971).  |
| Stability over time                        | 4                                     | Whether MM scores are stable across differing time points  |

<sup>2</sup> The numbers exceed 20 as some papers assessed more than one outcome

Table 5 Summary of main characteristics and findings of review papers (collated in outcomes)

|   |   |
|---|---|
| <b>Author:</b><br>McMahon, Camberis,<br>Berry, & Gibson,<br>(2016)<br>Australia<br><br><b>Outcome:</b><br>Maternal foetal<br>attachment<br>Stability of MM<br><br><b>Quality Rating:</b><br>82% | <b>Aim:</b> To examine whether maternal foetal attachment predicted maternal MM at 7 months and whether there was stability in caregiver MM over the first 19 months of the infants' life postnatal years.  |
|   | <b>Design:</b> Longitudinal (third trimester – 19 months), observation, interview, within subject design  |
|   | <b>Participants:</b> 150 women at 7 months, 132 at 19 months  |
|   | <b>Measure:</b> Maternal foetal attachment scale (MFAS) (Cranley, 1981), MM assessment by free play observation and interviewing mothers (Meins et al., 2001)   |
|   | <b>Procedure:</b> MFAS completed in third trimester. At 7 months home visit mothers participated in free play observation coded for MM. At the 19 months visit interview to assess MM mothers.<br><b>Key Findings:</b> Maternal-foetal attachment significantly predicted indices of maternal MM at 7 ( $p<.001$ ) and 19 months ( $p<.05$ ). Found that mothers who made more mind-related comments during play at 7 months ( $p<.001$ ) also did at 19 months ( $p<.001$ ) showing temporal validity of MM.   |
| <b>Author:</b><br>(Meins et al., 2017)<br><br>England<br><br><b>Outcome:</b><br>Stability of<br>attachment security<br><br><b>Quality Rating:</b><br>79%  | <b>Limitations:</b> Sample characteristics of older women, highly educated and culturally homogenous limit generalisability of the results to other populations. Due to observational design causation is not able to be inferred.  |
|   | <b>Aim:</b> To investigate how maternal MM and sensitivity in the first year of life is related to children's perspective taking abilities aged 2 and preschool attachment security.  |
|   | <b>Design:</b> Longitudinal (8-51 months)   |
|   | <b>Participants:</b> 206 mother and child dyads (108 girls)   |
|   | <b>Measure:</b> 20 minute free play coded for MM (Meins et al., 2001), and maternal sensitivity (Ainsworth, Bell, & Stayton, 1974), attachment security strange situation (Ainsworth, Blehar, Waters, & Wall, 1978), test of pretend play-ToPP (Lewis & Boucher, 1997), adapted strange situation procedure (Cassidy, Marvin, & The MacArthur working group, 1992)<br><b>Procedure:</b> Infants (8 months old) with mothers 20 minute free play coded for MM and maternal sensitivity. Infant (15 months old) attachment security measured using the strange situation. Infant (26 months old) children's ability to respond within symbolic play using the ToPP. Mothers reported on stressful life events when the infants were 26 and 44 months old. Infant (44 months old) attachment security was re-assessed using the adapted strange situation procedure. |
| <b>Author:</b><br>(Laranjo, Bernier, &  | <b>Key Findings:</b> Non-attuned mind-related comments significantly predicted insecure attachment at 44 ( $p<.01$ ) and 51 ( $p<.01$ ) months. Found that non-attuned comments at 12 months influenced preschool attachment either by the role in establishing an insecure attachment at 15 months or by significantly predicting less sophisticated perspective-taking abilities at 26 months (coefficient = -0.8). Appropriate mind-related comments were not significantly predictive of secure attachment at 44 and 51 months.   |
|   | <b>Limitations:</b> MM is not able to be re-assessed as after 12 months old it involves an interview with the caregiver which is unable to distinguish between attuned and non-attuned comments. There is a high dropout rate which limits external validity. Causation is unable to be inferred due to the nature of the research.   |
|   | <b>Aim:</b> Examine whether maternal sensitivity mediates the relationship between maternal MM and infant attachment security.  |
|   | <b>Design:</b> Longitudinal (12 – 15 months) observation, within subjects   |

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| Meins, 2008)<br>Canada<br><br><b>Outcome:</b><br>Sensitivity<br>Attachment<br><br><b>Quality Rating:</b><br>73%                            | <b>Participants:</b> 50 mother infant dyads (26 girls)   |
|  | <b>Measure:</b> Maternal behaviour Q-sort (Pederson et al., 1990), MM observation of free play (Meins et al., 2001), Attachment Q sort (AQS, Waters & Deane, 1985).  |
|  | <b>Procedure:</b> At the first home visit maternal sensitivity assessed with maternal behaviour Q-sort, and a 10 minute free play session was videoed for MM. At the second visit when the infant was 15 months old, attachment assessed using the AQS).   |
|  | <b>Key Findings:</b> Found that sensitivity ( $p<.01$ ), MM ( $p<.05$ ) and attachment were all significantly positively inter-related. State that MM is a pre-requisite for maternal sensitivity and maternal sensitivity mediated the link between MM and attachment security ( $p<.05$ ).<br><b>Limitations:</b> They used an interview instead of the strange situation to assess attachment security which reduced internal validity. The external validity is reduced due to the sampling.   |
| Author:<br>(Meins et al., 2012)<br><br>United Kingdom<br><br><b>Outcome:</b><br>Attachment Security<br><br><b>Quality Rating:</b><br>67%   | <b>Aim:</b> To establish whether mothers use of appropriate and non-attuned mind-related comments independently predicted subsequent infant-mother attachment over and above any contribution of maternal sensitivity.   |
|  | <b>Design:</b> Longitudinal (8 – 15 months), observation, within subjects  |
|  | <b>Participants:</b> 206 mother infant dyads (108 girls).  |
|  | <b>Measure:</b> MM assessed by coding a 20 minute free play session (Meins et al., 2001). Maternal sensitivity coded (Ainsworth et al., 1974). Strange situation procedure (Ainsworth & Wittig, 1969)  |
|  | <b>Procedure:</b> MM and maternal sensitivity was assessed by a 20 min free play with mother and infant (8 months old) and coded via videotapes. Infant-mother attachment security assessed (infant 15 months old) using the strange situation procedure.  |
|  | <b>Key Findings:</b> Both indices of maternal MM (attuned and non-attuned mind-related comments (both $p<.001$ )) significantly predicted unique variances in whether the infant had a secure or insecure attachment style, independently of maternal sensitivity. Secure-infant mothers obtained higher scores for appropriate mind-related comments compared to avoidant-infant mothers and lower scores for non-attuned comments for both avoidant and resistant groups. It suggests that MM is best characterised as a multidimensional construct.<br><b>Limitations:</b> It provides a prediction but does not understand the mechanisms that cause the link due to observational method. The limits in methodology in sampling reduce external validity. |
| Author:<br>(Arnott & Meins, 2007)<br><br>United Kingdom<br><br><b>Outcome:</b><br>Attachment security<br><br><b>Quality Rating:</b><br>67% | <b>Aim:</b> To investigate how parents antenatal representations of attachment experiences related to their MM during infant-parent interactions at 6 months and to subsequent attachment security at 12 months.   |
|  | <b>Design:</b> Longitudinal (third trimester – 12 months)  |
|  | <b>Participants:</b> 25 mother and father infant triads and 3 mother infant dyads.   |
|  | <b>Measure:</b> MM observation schedule (Meins et al., 2001), Adult attachment interview (AAI, George, Kaplan, & Main, 1985), strange situation (Ainsworth et al., 1971)   |
|  | <b>Procedure:</b> Parents attachment representations assessed during the last trimester using the AAI. Mothers and fathers took part in 30 minute free play laboratory session to assess for MM (infant 6 months). At 12 months attachment security was assessed with the strange situation.<br><b>Key Findings:</b> Parents' higher reflective functioning during the pre-natal stage was significantly associated with greater MM when the infant was 6 months old, with greater effects for fathers (25% variance) than mothers (17% variance). Suggested that parental MM may  |

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|  | help to explain intergenerational transfer of attachment security.  |
|  | <b>Limitations:</b> Low participant numbers and large drop-out means that the results have reduced external validity, only suggestion of effect due to low participants. Observational method means that causality is not able to be inferred.  |
| <b>Author:</b><br>(Lundy, 2003)                        | <b>Aim:</b> To explore the relations with both mothers and fathers mind-related comments to their infants and to assess whether there is a relationship with the subsequent infant attachment security.   |
| United States of America                               | <b>Design:</b> Longitudinal (6 – 13 months), Laboratory observation, within subject   |
|  | <b>Participants:</b> 24 triad of mothers, fathers and their infants (13 male)   |
|  | <b>Measure:</b> Demographic questionnaire, Centre for epidemiological studies-depression scale-CES-D (Radloff, 1977), MM coding (Meins et al., 2001), AQS (Waters & Deane, 1985).   |
| <b>Outcome:</b><br>Attachment security                 | <b>Procedure:</b> Parents completed the demographic questionnaire and the CES-D when the infants were 6 months old and video-taped for a 6 minute face to face interaction, coded for MM. Parents and their infant (13 months) completed AQS.   |
| <b>Quality Rating:</b><br>58%                          | <b>Key Findings:</b> MM is an important construct which is related to the formation of an infant's secure attachment for both fathers and mothers ( $p<.05$ ). MM parents engage in more parent-infant synchrony ( $p<.01$ ) which in turn significantly predicts the attachment security scores ( $p<.01$ ).   |
|  | <b>Limitations:</b> Small sample, particularly for follow up. Used a 6 minute observation when the standard is 20 minutes. Did not assess for confounding variables such as parental sensitivity. Observational style causation is unable to be inferred.   |
| <b>Author:</b><br>(Meins et al., 2003)                 | <b>Aim:</b> To investigate the construct validity for maternal MM in the context of its value as a predictor of children's later understanding of mind.   |
| United Kingdom   | <b>Design:</b> Longitudinal (6-55 months), laboratory observational within subject design.  |
|  | <b>Participants:</b> 52 children (25 girls) and their mothers, predominately lower middle class white.  |
| <b>Outcome:</b><br>ToM                                 | <b>Measure:</b> MM free play observation and interview (Meins et al., 2001), Maternal sensitivity 9-point scale (Ainsworth et al., 1971), ToM– deceptive box task (Hogrefe, Wimmer, & Perner, 1986), unexpected transfer task (Wimmer & Perner, 1983), appearance reality task (Flavell, Flavell, & Green, 1983) Stream of Consciousness (SoC) (Flavell, Flavell, & Green, 1993).         |
|  | <b>Procedure:</b> Infant-mother interaction was videotaped at 6 months and coded for MM and maternal sensitivity. At 48 months mothers were interviewed for MM. At 55 months the infants were tested on three ToM and SoC tasks.  |
| <b>Quality Rating:</b><br>73%                          | <b>Key Findings:</b> Mothers mind-related comments at 6 months predicted MM at 48 months. MM at 6 months significantly related to ToM (24% variance) and SoC (9% variance) at 45 and 55 months. Maternal sensitivity did not predict ToM once MM taken into account. Results suggested direct links between appropriate mind-related comments and children's later understanding of mind. |
|  | <b>Limitations:</b> Limitations of population not being generalisable to general population and participants were not randomly selected. Observational so causation cannot be inferred.   |
| <b>Author:</b><br>(Laranjo, Bernier, Meins, & Carlson, | <b>Aim:</b> To investigate the longitudinal associations between maternal MM, infant attachment security and two aspects of children's first articulation of ToM  |
|  | <b>Design:</b> Longitudinal (12-26 months), naturalistic observation, interview and questionnaire, within-subject design  |

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| <p>2010)</p> <p>Canada</p> <p><b>Outcome:</b><br/>Theory of mind</p> <p><b>Quality Rating:</b><br/>70%</p>                                | <p><b>Participants:</b> 61 mother infant dyads (36 girls)</p> <p><b>Measure:</b> Sociodemographic questionnaire, video-taped interaction coded MM (Meins et al., 2001). AQS (Waters &amp; Deane, 1985), MacArthur Communicative Development Inventory – MCDI (Fenson et al., 1993), ToM Measures – Discrepant desires (Repacholi &amp; Gopnik, 1997) and visual perspectives (Carlson, Mandell, &amp; Williams, 2004).</p> <p><b>Procedure:</b> Three home visits were conducted. The first (12 months old) free play was videoed with and without toys and coded for MM. Second (15 months old) attachment security assessed using the AQS. Third (24 months old) ToM was assessed with discrepant desires and visual perspective tasks.</p> <p><b>Key Findings:</b> Mother's use of appropriate mind-related comments during certain play contexts at 1 year of age was positively related to aspects of children's ToM understanding at 2 years. Children displayed significantly better performance on discrepant desires understanding when mothers made more mind-related comments when free playing without toys at 12 months old (<math>p&lt;.01</math>). Children had a significantly better understanding of visual perspectives when mothers made more appropriate mind-related comments during free play with toys (<math>p&lt;.05</math>).</p> <p><b>Limitations:</b> Larger sample size required for separate analysis of boys and girls. It only investigates two aspects of ToM. A more sociodemographic diverse sample would increase extrapolation of results. It does not analyse the links between attachment security and MM. Observational methodology means that causation is not able to be inferred.</p>  |
| <p><b>Author:</b><br/>(Meins et al., 2002)</p> <p>United Kingdom</p> <p><b>Outcome:</b><br/>ToM</p> <p><b>Quality Rating:</b><br/>67%</p> | <p><b>Aim:</b> To investigate the relationship between social interaction during infancy and children's subsequent theory of mind.</p> <p><b>Design:</b> Longitudinal (6 – 48 months) laboratory observational, within subject design</p> <p><b>Participants:</b> 57 dyads (28 girls) predominantly white British</p> <p><b>Measure:</b> 20 minute free play observation to code MM (Meins et al., 2001) interaction, strange situation procedure (Ainsworth et al., 1971). ToM assessments: Appearance-reality task (Flavell et al., 1983), the deceptive box task (Hogrefe, Wimmer, &amp; Perner, 1986), unexpected transfer task (Wimmer &amp; Perner, 1983). Receptive visual intelligence (Dunn et al., 1997).</p> <p><b>Procedure:</b> MM was assessed for at 6 months, attachment security was assessed at 12 months using the strange situation and a battery of ToM tests were completed at 45 and 48 months. At 48 months the receptive verbal intelligence was administered.</p> <p><b>Key Findings:</b> Maternal MM at 6 months significantly predicts children's later development of ToM at 45 and 48 months (11% of variance). MM (<math>P&lt;.01</math>) is a better predictor of ToM than attachment security (not significant) independently of children's verbal ability, mothers' educational attainment, maternal sensitivity and the number of siblings. Attachment security positively correlated with MM, appropriate mind-related comments correlated with attuned (<math>p&lt;.005</math>), and non-attuned mind-related comments correlated with insecure attachment (<math>p&lt;.001</math>).</p> <p><b>Limitations:</b> Limitations of sample as it was not randomised and lacks external validity. Observational nature so causation cannot be inferred.</p> |
| <p><b>Author:</b><br/>(Licata, Kristen, &amp; Sodian, 2016)</p>   | <p><b>Aim:</b> To examine the relative impact of maternal emotional availability (EA) in infancy and at 4 years on child ToM while controlling for MM.</p> <p><b>Design:</b> Longitudinal (7-50 months) observation, laboratory setting, within subject</p> <p><b>Participants:</b> 56 Mother child dyads</p>  |

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| <p>Germany</p> <p><b>Outcome:</b><br/>Links to parental sensitivity<br/>Theory of Mind</p> <p><b>Quality Rating:</b><br/>64%</p>   | <p><b>Measure:</b> MM was assessed using Meins et al, 2001 observational criteria. EAS scale (Biringen, 2008), ToM – contents false belief and location false belief task(Wellman &amp; Liu, 2004), German language test (SETK 3-5, Grimm, 2001 cited in Licata et al., 2016), executive functioning test (Fagot &amp; Gauvain, 1997), Children’s behaviour questionnaire-very short form (Putnam &amp; Rothbart, 2006).</p> <p><b>Procedure:</b> At 7 months mother infant interaction was assessed with a free play observation for both EA and MM. When the infant was 50 months EA was reassessed and executive functioning, ToM and the German language test were completed.</p> <p><b>Key Findings:</b> MM was significantly correlated with most EA dimensions but MM did not significantly predict ToM. EA had a unique effect on infants ToM (<math>p&lt;.001</math>) skills even when controlling for child language. Believe that their research shows it is maternal sensitivity (<math>p&lt;.01</math>), and specifically high emotional connectedness not MM that influences infant’s development of ToM.</p> <p><b>Limitations:</b> Small sample size. Limitation of population generalisability and there was no indication of the population that did not consent. Observation meant causation cannot be inferred.</p>  |
| <p><b>Author:</b><br/>(Laranjo, Bernier, Meins, &amp; Carlson, 2014)</p> <p>Canada</p> <p><b>Outcome:</b><br/>Theory of mind<br/>Stability over time</p> <p><b>Quality Rating:</b><br/>61%</p> | <p><b>Aim:</b> To extend the examination of the links among maternal mind-related comments, infant attachment security and children’s ToM at 4 years of age.</p> <p><b>Design:</b> Longitudinal (12 - 48 months old), observation within subject design</p> <p><b>Participants:</b> 59 mother infant dyads</p> <p><b>Measure:</b> AQS (Waters &amp; Deane, 1985), MM coding system (Meins et al., 2001), Level 1 visual perspective taking task, contents false belief, Level 2 visual perspective taking (Carlson, Mandell, &amp; Williams, 2004), Wechsler Preschool and Primary Scale of Intelligence – third Edition - WPPSI-III, (Wechsler, 2002)</p> <p><b>Procedure:</b> Infants 12 month’s old socio-demographics taken and free play between infant and caregiver videotaped and coded for MM. At 15 months infant security of attachment assessed using AQS. At 24 months ToM abilities assessed using perspective taking and contents false belief tasks. At 48 months ToM false belief tasks completed and children’s verbal IQ assessed by WPPSI-III.</p> <p><b>Key Findings:</b> Results replicated previous studies that mother’s appropriate mind-related comments during free play at 12 months of age was significantly related to children’s ToM at 2 (<math>p&lt;.01</math>) and 4 (<math>p&lt;.01</math>) years old. Replication across two time points demonstrates stability of effect of MM on ToM. No significant association was found between attachment security and ToM. No significant association was found between with IQ and ToM.</p> <p><b>Limitations:</b> Sample was from a low risk and homogenous population. Did not report attachment or IQ in relation to MM. Observation methodology means that causality is unable to be inferred.</p> |
| <p><b>Author:</b><br/>(Meins, Fernyhough, Arnott, Leekam, &amp; de Rosnay, 2013)</p> <p>United Kingdom</p> <p><b>Outcome</b><br/>Maternal Sensitivity</p>                                      | <p><b>Aim:</b> To investigate whether both indices of maternal MM, appropriate and non-attuned mind related comments, related to children’s internal state language and perspectival symbolic play at age 2 and their ToM performance at 4.</p> <p><b>Design:</b> Longitudinal (8-51 months), within subject, laboratory observational</p> <p><b>Participants:</b> 206 mothers and children (108 girls), 161 followed up at 51 months</p> <p><b>Measure:</b> 20 minute free play observational MM (Meins et al., 2001), maternal sensitivity (Ainsworth et al., 1974), MCDI (Fenson et al., 1993), Test of pretend play and a structured task involving junk objects (Lewis &amp; Boucher, 1998). Phase 3: ToM battery based on Wellman and Liu (2004). British Picture Vocabulary Scale II (BPVS II) (Dunn, Dunn, Whetton, &amp; Burley, 1997)</p> <p><b>Procedure:</b> Maternal MM and sensitivity measured during a 20 minute free play session at 8 months. Infant state language</p>  |

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| Language development<br>ToM                             | development (ISL) and perspectival symbolic play (PSP) was measured at 26 months. Battery of tests used to assess children's ToM and receptive verbal ability at 51 months.  |
| <b>Quality Rating:</b><br>58%                           | <b>Key Findings:</b> Appropriate mind-related comments (8 months) positively associated with ToM at 51 months ( $p < .01$ ) but unrelated to ISL and PSP at 26 months. Non-attuned comments negatively correlated with ISL ( $p < .01$ ) and PSP ( $p < .001$ ) but unrelated to ToM.<br><b>Limitations:</b> High drop-out rate due to longitudinal nature. Opportunity sample (not representative). Observational so causation cannot be inferred.  |
| <b>Author:</b><br>(Kirk et al., 2015)                   | <b>Aim:</b> To test whether the behavioural and verbal indices of MM measure the same underlying construct and whether they have temporal validity over infancy. To assess whether MM at 6 months predicts ToM at 5-6 years.   |
| United Kingdom  | <b>Design:</b> Longitudinal (6-70 months), Observation, within subject design  |
| <b>Outcome</b><br>Stability over time<br>ToM            | <b>Participants:</b> 18 mother infant dyads, 15 remained at ToM<br><b>Measure:</b> Observation MM coding scheme (Meins et al, 2001). ToM – Strange stories (Happe, 1994) . BPVS II (Dunn et al., 1997)<br><b>Procedure:</b> Mother and infant interaction video-taped at 10, 12, 16 and 20 months of age and coded for all 5 levels of MM. ToM was assessed at 5-6 years of age using the strange stories task and receptive verbal ability was assessed through BPVS II   |
| <b>Quality Rating:</b><br>58%                           | <b>Key Findings:</b> The five measures of MM were poorly correlated with each other not demonstrating a collective description of MM. Only appropriate mind-related comments showed significant temporal stability (all $p < .05$ ). Mother's appropriate MM (10 months) comments were predictive of ToM at 5-6 years (21% - 36% variance).<br><b>Limitations:</b> Although accounted for, half the parents had received gesture training. Small sample size, only 15 at follow up. Observational method so causation is not inferred.   |
| <b>Author:</b><br>(Bernier, Carlson, & Whipple, 2010)   | <b>Aim:</b> To investigate the prospective links between the quality of parent-infant interactions and subsequent child executive functioning (EF)   |
| Canada  | <b>Design:</b> longitudinal (12 – 26 months), Observation, within subject  |
| <b>Outcome:</b><br>Executive functioning<br>(cognition) | <b>Participants:</b> 80 middle class mother infant dyads (44 girls).<br><b>Measure:</b> Maternal Behaviour Q-Sort-(MBQS)(Pederson & Moran, 1995), MM coded using Meins et al (2001) coding system. Maternal autonomy support rating system (Grolnick, Frodi, & Bridges, 1984). Executive functioning measures – hide the pots (Hughes & Ensor, 2005), categorization (Carlson, Mandell, & Williams, 2004), Spin the pots (Hughes & Ensor, 2005), Delay gratification (Kochanska, Murray, & Harlan, 2000), Shape Stroop (Kochanska, Murray, & Harlan, 2000) and Baby Stroop (Hughes & Ensor, 2005).<br><b>Procedure:</b> Infant 12 months old involved at 10 minute videoed free play session was coded to assess for MM and the MBQS assessed maternal sensitivity. Infant 15 months old mothers assessed for maternal autonomy support. Infants were 18 months old were assessed in the laboratory for EF using hide the pots and categorisation methods. Infants were 26 months assessed for EF using spin the pots, delay of gratification, and shape Stroop and baby Stroop. |
| <b>Quality Rating:</b><br>76%                           | <b>Key Findings:</b> MM (12 months, $p < .01$ ), maternal sensitivity ( $p < .01$ ) and maternal autonomy support ( $p < .01$ ) all significantly related to their infants EF. Maternal sensitivity was more significantly related to better conflict RF at 26 months ( $p < .05$ ) and working memory at 18 months but this trend did not hold above the controls. Maternal MM had a significantly positive influence on working memory when the infant was 18 months ( $p < .01$ ) and conflict and impulse control at 26 months ( $p < .10$ ). MM ( $p < .05$ ) was positively related to   |



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|   | <p>changes in child performance between 18 and 26 months. Maternal autonomy reported the most significant out comes for EF even when the controls of general cognitive ability and maternal education were accounted for.</p> <p><b>Limitations:</b> External validity could be compromised due to sampling. It requires replication in a larger more socially diverse sample. Due to observation method causation is not able to be inferred.</p>  |
| <p><b>Author:</b><br/>Bernier, McMahon, &amp; Perrier, (2016)</p> <p>Canada</p> <p><b>Outcome:</b><br/>Cognitive development and school readiness</p> <p><b>Quality Rating:</b><br/>76%</p> | <p><b>Aim:</b> To examine a sequential mediation model by which early MM would relate to child language at age 2, which in turn would relate to effortful control at age 3 and then age 4 which would finally relate to children's cognitive school readiness in kindergarten.</p> <p><b>Design:</b> Longitudinal (12 – 60 months), observational, within-subject</p> <p><b>Participants:</b> 204 (161 by 60 months) infants and their mothers</p> <p><b>Measure:</b> Maternal MM (Meins et al., 2001), MBQS (Pederson &amp; Moran, 1995), Mental Development Index-MDI, (Bayley, 1993) MCDI (Fenson et al., 1993) Effortful testing: Delay of Gratification task (Kochanska, Murray, &amp; Harlan, 2000), Whisper (Kochanska, Murray, Jacques, Koeing, &amp; Vandegest, 1996), Tower (Kochanska et al., 1996), Count and label (Gordon &amp; Olson, 1998), Less is more (Carlson, Davis, &amp; Leach, 2005), Simon says (Strommen, 1973) Lollipop test – school readiness (Chew &amp; Morris, 1984).</p> <p><b>Procedure:</b> Infants (12 months old) and mothers completed a 10 minute free play session which was coded for MM and MBQI and completed the MDI. Infants 24 months old mothers completed the MCDI. Infants 36 months old they completed the effortful testing tasks of delay of gratification. Infant 48 months old the effortful control tasks of whisper, tower, count and label, less is more and Simon Says completed. School readiness measured using the lollipop test the spring before their first year at school.</p> <p><b>Key Findings:</b> Found that early MM favoured children's cognitive school readiness through its intermediate impact on child language at age 2 (<math>p&lt;.01</math>), which supported effortful control at 3 (<math>p&lt;.05</math>) and subsequently effected effortful control at age 4 (<math>p&lt;.01</math>). Maternal sensitivity was also controlled for which strengthens the argument for MM being a factor in infant outcomes independently of maternal sensitivity. These results suggest that the effect of MM on school readiness has previously been underestimated.</p> <p><b>Limitations:</b> Participant drop out. Non-experimental nature of the research means that causation not to be inferred.</p> |
| <p><b>Author:</b><br/>(Laranjo &amp; Bernier, 2013)</p> <p>Canada</p> <p><b>Outcome:</b><br/>Language</p> <p><b>Quality Rating:</b><br/>64%</p>   | <p><b>Aim:</b> To examine the prospective links between early MM and child expressive vocabulary.</p> <p><b>Design:</b> Longitudinal (12-26 months), observation, within subjects</p> <p><b>Participants:</b> 84 mother infant dyads (50 girls)</p> <p><b>Measure:</b> MM videotaped and coded (Meins et al., 2001) MCDI, (Fenson et al., 1993).</p> <p><b>Procedure:</b> Two home visits infants 12 months old a 20 minute free play sequence was videotaped and assessed for MM. Infants 26 months infant's expressive language assessed using MCDI.</p> <p><b>Key Findings:</b> MM was significantly related to children's expressive vocabulary (<math>p&lt;.05</math>) even when SES was taken into account. Maternal comments on child cognitions were related to children's expressive language (<math>p&lt;.05</math>).</p> <p><b>Limitations:</b> Not assessed for sensitivity. Children's general cognitive ability was not controlled for. Missing data was not mentioned reducing internal validity. Observational nature so causation is unable to be inferred.</p>  |
| <p><b>Author:</b><br/>(Bordeleau, Bernier, &amp; Carrier, 2012)</p>   | <p><b>Aim:</b> To investigate the prospective links between the quality of mothers and fathers interactions and pre-schoolers sleep behaviour.</p> <p><b>Design:</b> Longitudinal (12 – 49 months), observation and sleep diaries, within subject design</p> <p><b>Participants:</b> 41 Mother-father-infant triads and 29 mother-infant dyads (42 girls)</p>   |

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| Canada   | <p><b>Measure:</b> MBQS, (Pederson &amp; Moran, 1995). MM Coding system (Meins et al 2001). Maternal autonomy support coding system (Whipple, Bernier, &amp; Mageau, 2011), Quality of father-child interaction coded using Mutually Responsive Orientation scale-MRO (Aksan, Kochanska, &amp; Ortmann, 2006). Children's sleep diary (Sadeh, 2011).</p> <p><b>Procedure:</b> Infants (12 months old) mothers assessed at home for maternal sensitivity (MBQS) and a free play session of 10 minutes was video recorded coded for MM. Second visit (15 months old) measured maternal autonomy through a 10 minute free play session. At 18 months fathers came to the lab for a videoed 10 minute free play session and measured using MRO. Mothers completed a sleep diary for three days following when the infants were 12 months, 18 months, 26 months and 4 years.</p> <p><b>Outcome:</b> Sleep</p> <p><b>Quality Rating:</b> 76%</p> <p><b>Key Findings:</b> The quality of mother infant and father infant interaction was positively significantly related to children's amount of night time sleep at pre-school age (<math>p &lt; .001</math>), even when SES and childcare was accounted for. MM, maternal sensitivity, maternal autonomy support and father-child interactions were all related collectively but not significant as separate indices.</p> <p><b>Limitations:</b> Correlational design means that cause cannot be inferred. It does not distinguish between maternal sensitivity and MM and sleep. It used a relatively small sample size limiting analysis and external validity.</p> |
| <p><b>Author:</b> (Meins, Fernyhough, Arnott, Turner, &amp; Leekam, 2011)</p> <p>United Kingdom</p> <p><b>Outcome:</b> Stability over time Temperament</p> <p><b>Quality Rating:</b> 73%</p> | <p><b>Aim:</b> To investigate whether there was temporal stability between 3 and 7 months MM. To establish whether MM comments related to infants temperamental characteristics.</p> <p><b>Design:</b> Longitudinal (3 - 7 months), questionnaire, observation, within subject.</p> <p><b>Participants:</b> 41 full term infant mother dyads (24 girls)</p> <p><b>Measure:</b> MM observation free play coded (Meins et al., 2011), Infant Behaviour Questionnaire- IBQ, (Rothbart, 1981)</p> <p><b>Procedure:</b> Infants 3 months mothers videoed and observed interacting with their infants as they would normally and again at 7 months with toys, both time points coded for MM. Infants were 7 months old the mothers' completed IBQ.</p> <p><b>Key Findings:</b> Found both indices of MM, attuned (<math>p &lt; .001</math>) and non-attuned (<math>p &lt; .01</math>) mind-related comments stable over the 4-month period. Both attuned and non-attuned mind related comments higher at 7 months. None of the 6 temperament dimensions significantly related either appropriate mind-related comments or their tendency to comment in a non-attuned manner.</p> <p><b>Limitations:</b> 4 months is only a small time period to assess stability of MM. The measure of temperament was rated by mothers who may be biased. Due to the observational nature causation is not able to be inferred.</p>  |
| <p>(Meins, Fernyhough, et al., 2013)</p> <p>United Kingdom</p> <p><b>Outcome:</b> Infants externalising and internalising behaviours</p>   | <p><b>Aim:</b> Investigated whether aspects of infant-mother interaction in the first year of life longitudinally predicts children's externalizing and internalizing behaviours.</p> <p><b>Design:</b> Longitudinal (8 – 61 months), observational within subject</p> <p><b>Participants:</b> 171 infant mother dyads (88 boys).</p> <p><b>Measure:</b> MM assessed and coded 20 minute free play (Meins et al., 2012). Measure for maternal sensitivity (Ainsworth et al., 1974). Beck Depression Inventory - BDI (Beck, Ward, Mendelsohn, Mock, &amp; Erbaugh, 1961). Index of social support (Henderson, Duncan-Jones, McAuley, &amp; Ritchie, 1978), Pre-school language scale (Lewis &amp; Boucher, 1997), Strengths and Difficulties Questionnaire-SDQ (Goodman, 1997).</p> <p><b>Procedure:</b> Mothers were assessed for MM and maternal sensitivity using observation of free play when their infants were 8 months old maternal depressive symptoms and perceived social support were also assessed. When the infants were 26 months infants early</p>   |

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| <b>Quality Rating:</b><br>70%  | language abilities were assessed. Children's behavioural difficulties were assessed at 44 and 61 months.  |
|  | <b>Key Findings:</b> Maternal MM in the first year was related to fewer externalising ( $p<.01$ ) and internalising difficulties ( $p<.01$ ) in the child especially in the low socio-economic group. This was evident when maternal sensitivity was controlled for suggesting that attunement to infant's internal mind is significantly related to a reduction in externalising and internalising difficulties. |
|  | <b>Limitations:</b> It relies on parental reports for behaviour, they may be under/over reporting. It did not assess attachment in relation to the findings. Due to the observational nature causation is not able to be inferred.  |
| <b>Author</b><br>(Farrow & Blissett, 2014)<br><br>United Kingdom<br><br><b>Outcome</b><br>Maternal Sensitivity<br>Feeding<br><b>Quality Rating:</b><br>61% | <b>Aim:</b> Evaluate the relationship between maternal MM when the infant is 6 months old and maternal sensitivity and feeding behaviour at 12 months old.  |
|  | <b>Design:</b> Longitudinal (6 – 12 months), observation at home, interview   |
|  | <b>Participants:</b> 74 mother infant dyads (35 boys), 60 had breast fed  |
|  | <b>Measure:</b> Interview for MM (Meins et al., 2001), Feeding interaction scale (Wolke, Summer, McDermott, & Skuse, 1987), Maternal sensitivity (Ainsworth et al., 1974)   |
|  | <b>Procedure:</b> Mothers interviewed for MM using a single question at 6 months. When infants 1 year old observed at home feeding and Mothers observed during free play for maternal sensitivity.  |
|  | <b>Key Findings:</b> MM at 6 months of age was significantly related to more positive and sensitive feeding behaviours at 12 months old ( $p<.05$ ). MM is higher in mothers who breast fed (mean 0.31) to those who did not (mean 0.22). This study suggests that MM is a prerequisite to maternal sensitivity.  |
|  | <b>Limitations:</b> By using the interview method for MM there is no way of knowing whether the comments were appropriate. Requires replication due to a homogenous sample and small sample size. Relies on observation and parental reports which may be influenced by expectation bias. Did not code free play for MM.  |

Infant developmental outcomes are separated to evaluate whether caregiver MM in the infants first year of life has an effect on different outcomes. The outcomes are organised into the following sections: attachment security, theory of mind (ToM), cognitive and language development, sleep, feeding and internalising and externalising behaviours, sensitivity and stability over time.

### ***Attachment Security***

Seven papers in this review explored the relationship between MM and later infant attachment styles. Six studies (Arnott & Meins, 2007; Laranjo et al., 2008; McMahon et al., 2016; Meins et al., 2002, 2012, 2017) scored relatively highly on the Tooth et al., (2005) quality checklist and are recognised as making a potentially important contribution to the question of if, and to what degree, MM predicts attachment security. The seventh paper (Lundy, 2003) of slightly lower quality, achieved 58% percent of the quality outcomes measured, so all research contributions will be considered.

Meins et al., (2012) found that attuned and non-attuned mind-related comments significantly predicted variance in infants' attachment styles at both insecure and secure level, including distinguishing between insecure-avoidant, insecure-resistant and insecure-disorganised (at  $p < .001$ ) attachment. These findings were found to be over and above any contribution of the known confounding variables of maternal sensitivity, social economic status (SES) and mothers' educational level. The analysis showed that mothers whose infants had a secure attachment style were very unlikely to have used non-attuned mind-related comments (only 2% of comments for secure dyads were non-attuned). Meins et al., (2012) found that the difference between the resistant and avoidant group were that the mothers in the resistant group used more non-attuned mind-related

comments compared with the avoidant group ( $p=.01$ : odds ratio = 1.55 95%). Meins et al., (2012) also found that there was a marginal effect ( $p<.06$ ) for mothers of disorganised infants who were more likely to produce non-attuned mind-related comments, and less likely to comment appropriately on their infants internal states compared to mothers with organised patterns of attachment (Meins et al., 2012). Meins et al (2017) extended on their earlier findings and found that non-attuned mind-related comments when the infant was 8 months old, predicted that the infant would have an insecure attachment at 44 ( $p<.01$ ) and 51 ( $p<.01$ ) months old, which remained consistent from 24 months old. However, they did not find that appropriate mind-related comments significantly predicted attachment security at 44 and 51 months, contradicting earlier findings. Laranjo et al., (2008) found that sensitivity ( $p<.01$ ), MM ( $p<.05$ ) and attachment were all significantly positively inter-related and found that MM is a pre-requisite for maternal sensitivity and maternal sensitivity mediated the link between MM and attachment security ( $p<.05$ ). Meins et al., (2002) found that attachment security positively correlated with MM, appropriate mind-related comments correlated with attuned ( $p<.005$ ) comments, and non-attuned mind-related comments correlated with insecure attachment ( $p<.001$ ). Lundy, (2003) provided further evidence that MM appears to be an important construct in the formation of a secure attachment and provided this evidence for both mothers and fathers ( $p<.01$ ). Parents who consider their infants perspectives were more inclined to engage in more frequent parent-infant synchrony ( $p<.01$ ) which predicts higher attachment security scores (Lundy, 2003).

Two studies explored how parents' attachment styles prenatally, may predict their parenting styles once the infant is born, specifically MM. Arnott & Meins, (2007) found that parents with higher reflective functioning during the pre-natal stage were

significantly associated with greater levels of MM when the infant was 6 months old, with greater effects for fathers (25% variance) than mothers (17% variance). Due to participant drop out, they were unable to complete full analysis on infant attachment styles but the descriptive statistics suggest that parental MM may help to explain intergenerational transfer of attachment security, further research is required to assess for this (Arnott & Meins, 2007). McMahon et al., (2016) found that maternal-foetal attachment significantly predicted indices of maternal MM at 7 ( $p < .001$ ) and 19 months ( $p < .05$ ). These two studies are a starting point for understanding how parents' attachment styles may predict their ability to be MM but more research is needed to determine whether this has an impact on infants own attachment styles.

These studies show some evidence that parents' MM before the infant is 12 months old is predictive of infant attachment security but not conclusively. The predictive strength is different across studies and Meins et al., (2017) did not find that MM predicted infants' secure attachment at 44 and 51 months. The evidence suggests that the two indices of MM have independent impacts on attachment security, such that attuned mind-related comments are associated with a secure attachment when the infant is 12 months old, and differing levels of non-attuned mind-related comments appear to be associated with insecure avoidant, resistant or disorganised attachment styles in infants. The results as to whether MM is independent of maternal sensitivity or inter-related and a pre-requisite of maternal sensitivity, at predicting attachment security in infants is inconclusive, and some of the research did not account for maternal sensitivity. The findings show that MM is a more significant predictor of attachment security than maternal sensitivity but it is not conclusive as it does not always correctly predict infant attachment security.

### ***Theory of Mind (ToM)***

Links have been made between conversational language and ToM and it has been suggested that these links may be explained by how pre-school children integrate external and internal information about the relationship between beliefs, desires and behaviour (Harris, 1996 & Harris & Leivers, 2000 cited in Meins et al., 2003). This relates to MM as mind-related comments may help the infant to integrate internal and external information. Meins et al., (2001) provided an initial indication that MM may be a mediating factor as to why securely attached infants have a superior performance on ToM tasks compared to insecurely attached infants. This review discusses the current research findings in relation to how MM may mediate the outcome of ToM acquisition.

Seven papers in this review explored the relationship between MM and later child ToM ability. Five studies (Laranjo et al., 2010, 2014; Licata et al., 2016; Meins et al., 2002, 2003) scored highly on the quality checklist (scores greater than 61) and are recognised as making a potentially important contribution to the question of if, and to what degree, MM impacts on the development of ToM. The remaining two papers (Kirk et al., 2015; Meins, Fernyhough, et al., 2013) of slightly lower quality, both achieved over fifty-eight percent of the quality outcomes measured.

Six of the seven papers in this review found that appropriate mind-related comments from mothers observed in free-play observations were significantly related to the infants' acquisition of ToM. Meins et al., (2002) found that appropriate mind-related comments on an infants' play when they were 6 months old predicted eleven percent of the variance on infants ToM at 45 and 48 months old ( $p < .01$ ). This significant finding was independent of other known predictors of ToM including children's verbal ability,

maternal education, maternal sensitivity and the number of siblings (Meins et al., 2002). Meins et al., (2003) extended these findings in that MM when the infant was 6 months old predicted 24% of the variance for ToM at both 45 and 55 months of age. Links were found between conversational language and ToM, before infants acquire the linguistic skills, and maternal sensitivity did not predict ToM once MM had been accounted for (Meins et al., 2002). Kirk et al., (2015) used free play with toys to find that MM was the sole predictor of ToM at ages 3-4 years ( $p < .05$ ) and it was longitudinally stable between the ages of 5-6 years. Appropriate mind-related comments accounted for 40% of the variance in children's ToM scores when they were 5 years old (Kirk et al., 2015). Meins, Fernyhough, et al., (2013) also provided evidence that attuned mind-related comments (8 months) were predictive of ToM development at 51 months ( $p < .01$ ).

Licata et al., (2016) provided contradictory evidence for the outcome that MM predicts ToM. High emotional availability predicted the infants ToM ( $p < .001$ ) even when they controlled for infant temperament, cognitive characteristics and early MM (Licata et al., 2016). However, this study reported a reduction in the mean appropriate MM comments made (appropriate 4.21, non-attuned 0.68) compared to the mean of other studies (appropriate 10.5, non-attuned 1.79). It may have been the case that some of the comments coded for emotional availability would have been coded for MM skewing the results but this cannot be determined from the results and would require recoding by an independent observer (Licata et al., 2016). The majority of the evidence from this review supports the view that mothers who make appropriate mind-related comments (MM) with their infants before they are 12 months of age predicts their infant's development of ToM.

Two of the studies looked more specifically at MM behaviour when mothers were observed in free-play with their infants, with and without toys. Laranjo et al., (2010)



found that mother mind-related comments without toys were positively linked ( $p < .01$ ) to infants' abilities on discrepant desires and visual perspective ToM tasks. A significant correlation ( $p < .05$ ) was found between mothers appropriate mind-related comments observed with toys and the visual perception ToM task (Laranjo et al., 2010). These findings had longitudinal stability and were expanded on by Laranjo et al., (2014) who found that more complex level 2 visual perception tasks and false belief tasks also correlated with appropriate mind related comments when using toys ( $p < .01$ ). These two studies indicate the multi-dimensional construct of MM and how mind-related comments in differing contexts have an impact on differing areas of infants' development of ToM. This more specific finding may account for some of the variation in findings, and is important to consider in future when assessing the impact of MM on ToM development (Laranjo et al., 2014).

Non-attuned mind-related comments have been under-reported in the current research, either with no significant correlation with ToM performance, or it not being reported at all (Kirk et al., 2015; Laranjo et al., 2010, 2014; Licata et al., 2016; Meins et al., 2002, 2003). Meins, Fernyhough, et al., (2013) researched non-attuned mind-related comments in more detail and found the relationship between non-attuned mind-related comments had an indirect, negative relationship with ToM, mediated by infants' symbolic play ( $p < .01$ ). Symbolic play has been identified as a predictor of children's ToM performance, as it suggests that the child's ability to use others perspectives in symbolic play may be a pathway in which children's social interactions are related to their ToM performance (Astington & Jenkins, 1995 & Youngblade & Dunn, 1995 cited in Meins, Fernyhough, et al., 2013). As the relationship with symbolic play and non-attuned mind related comments has only been found in one paper in the review, more research of the

pathways that mediate the link between non-attuned mind-related comments and ToM performance are required to improve external validity.

The research covered in this systematic review provides significant evidence that MM has some association with ToM acquisition, specifically a relationship between appropriate mind-related comments and ToM in children. MM is believed to be a multi-dimensional construct (Meins, 2013) and there still needs to be more research to look at the specific pathways to help understand the strength of MM and how the specific mind-related appropriate comments during play with and without toys has different association with ToM acquisition. More research is needed on non-attuned mind-related comments and their effect of ToM acquisition, specifically as to whether perspective symbolic play is a mediating factor.

### ***Cognitive and Language Development***

Infants' cognitive and language development have been linked to caregiver MM. Infant cognitive and language development are both areas of importance when thinking about infant school readiness. Four studies reported on results relating to the relationship between either cognitive or language development. Three of these studies (Bernier et al., 2010, 2016; Laranjo & Bernier, 2013) achieved good quality ratings (scores >61%), with one study (Meins, Fernyhough, et al., 2013) scoring 58% for quality. Altogether, the four studies exploring MM and cognitive and language development are positioned to make a relatively important contribution.

Meins et al., (2002) found that MM predicted ToM before infants had developed language and encouraged future research to investigate whether language development may be linked to MM. Laranjo & Bernier (2013) found that mothers' appropriate MM

while interacting with their 12 month old infant was related ( $p < .05$ ) to their children's enhanced expressive language at two years of age, even when accounting for confounding variables. Non-attuned mind-related comments were not provided in the results, despite stating that they had been recorded, so it is unknown if there is any relationship with them and language development. Meins, Fernyhough, et al., (2013) although lower in quality found conflicting results for MM and language development, reporting that appropriate mind-related comments were not related to children's acquisition of internal state language. However, non-attuned mind-related comments were negatively associated with internal state language ( $p < .01$ ) and perspectival symbolic play ( $p < .001$ ). These are conflicting findings but both studies show how language could be an outcome of the different aspects of MM.

Bernier et al., (2010) found that mothers who showed more appropriate MM at 12 months had infants who performed better on the executive functioning tasks assessment of working memory at 18 months ( $p < .01$ ) and conflict and impulse control at 26 months ( $p < .01$ ). Their results suggest that MM can build on basic levels of executive functioning that were created in part by autonomy-supportive parental behaviour, however this needs to be interpreted with caution as causation is not inferred due to the method of collection. Bernier et al., (2016) expanded on previous results and tested a serial mediation model by which appropriate MM with an infant would have a positive impact on children's language development, effortful control and school readiness. The finding that appropriate MM was the only significant direct link, suggests that there were no other mediating factors in the underlying developmental process ( $p < .01$ ) (Bernier et al., 2016) in this study. However, as it is not one hundred percent predictive, there are other confounding variables affecting infants' development of language development, effortful

control and school readiness (Bernier et al., 2016). These findings link appropriate mind-related comments as one of the mediators to both language and cognitive development and ultimately school readiness.

Bernier et al., (2016) suggests that the role of MM on the outcomes of language and cognitive development have previously been underestimated and suggested that appropriate MM is linked to school readiness in pre-school children. Language and cognitive development are complex concepts with multiple confounding variables, and due to the limited research in this area, and the conflicting previous results, more research is required. Research also needs to include the outcomes of non-attuned MM and whether this has a differing impact on these outcomes. However, it does tentatively draw links between MM and infant language and cognitive development.

### ***Sleep, Feeding, and Internalising and Externalising Behaviours***

There is also limited research in both the outcomes of MM for sleep and feeding behaviour, with only one paper for each outcome included in this review. Bordeleau, Bernier, & Carrier, (2012) found that there was a longitudinal relationship between parenting behaviours of maternal sensitivity, MM (aged 12 months), autonomy and quality of father interaction on the percentage of the child's sleep (3 and 4 years old). They found that combined, these parenting factors accounted for 11% of the variance in child sleep, when SES and day-care were accounted for, but none of the specific aspects of maternal behaviour were uniquely associated with the percentage of night-time sleep. These maternal and paternal characteristics combined predicted the percentage of pre-schoolers night-time sleep and accounted for 18% of the variance. Although this paper scored at 76% for quality, more research is needed to separate these independent variables

to show whether MM has an independent predictor of the outcome of child sleep behaviour.

Farrow & Blissett (2014) used the interview question to assess maternal MM when the infant was 6 months old, and found that it was directly predictive of more positive and sensitive maternal behaviours during feeding, when the child was 12 months old ( $p < .02$ ). Mothers who were less MM may view mealtimes as more functional than social, and be focused on the act of feeding, detracting from expressing positive vocalisations or sensitivity, which may lead to more insensitive feeding (Farrow & Blissett, 2014). Farrow & Blissett, (2014) found that maternal sensitivity mediated the effects of MM on feeding sensitivity and on observed positive vocalisation during feeding, suggesting that MM is a pre-requisite to maternal sensitivity. As the researchers in this study did not directly assess MM using an observational methodology, it was not possible to explore whether the MM comments made by mothers were attuned or not. Thus, future research needs to see if the separate indices of MM have different outcomes on sensitive feeding behaviour. However, they found that mothers who were MM were more likely to consider their child's thoughts and feelings during feeding and be more focused on their infants' pleasure than just seeing meal times as functional.

Meins et al., (2011) assessed MM when infants were 3 and then 7 months old and assessed infant temperament at 7 months and scored a quality rating of 73%. The results from this study showed no relationship between maternal tendencies to comment either appropriately or in a non-attuned manner on infants' internal states (MM comments) and any of the six temperament dimensions (activity level, smiling and laughter, fear, distress to limitations, soothability and duration of orienting). Importantly, assessment of outcome (in this instance temperament outcome) at 7 months was the earliest that an outcome had

been assessed in any of the papers reviewed here. Thus, it is possible that the no observed relationship between MM and temperament reported in this paper might mean that the effects of MM were not yet observable or, indeed, that MM predicted different aspects of infant temperament.

Meins, Centifanti, Fernyhough, & Fishburn, (2013) explored MM, assessed when infants were 8 months old, and its relationship to child behaviour measured by parent and teacher reports on the Strengths and Difficulties Questionnaire (SDQ, Goodman, 1997) at 44 and 61 months old, scoring a quality rating of 70%. The results showed that MM in the first year of life was related to fewer teacher and parents reports of internalising and externalising difficulties at follow up, especially in the lower SES group ( $p < .01$ ). These results showed that having an appropriately MM mother mitigated externalising and internalising behaviours at 44 and 61 months. Interestingly, MM was not related to parent and teacher reports of behavioural difficulties in the high SES group, but this may be a statistical artefact given the reduced number of reported difficulties with externalising and internalising behaviours in this group. Unfortunately, this study made no report on non-attuned MM and any relationship to internalising or externalising behaviour. Overall, the researchers suggested that in lower SES groups, a mother who is MM is more likely to tune into the child's thoughts and feelings even when their behaviour is difficult, avoiding escalation of the child's maladaptive behaviour.

Across this small sample of 4 papers exploring the associations between MM and outcomes of sleep, feeding and behavioural difficulties, it is clear that more research is required. Nonetheless, the results in some of the studies reported here have shown that MM, specifically attuned MM comments, is related to these outcomes. However, none of these studies looked at non-attuned MM and whether indices of MM have a differing

relationship with these outcomes, highlighting the need for future research. The links to MM improving behavioural outcomes from lower SES families is very interesting and more research is required to assess whether it may be a way to promote school readiness for children from this group.

### *Sensitivity*

The research literature has struggled to replicate the strength of maternal sensitivity in predicting levels of attachment security, especially in distinguishing between insecure avoidant and resistant categories (De Wolff, & Van IJzendoorn, 1997). It has been hypothesised that maternal behaviours linked to infants mental states will be more useful and easier to operationalise than the generalised construct of maternal sensitivity (Meins and Fonagy et al 1997, Meins et al., 2001). Meins et al., (2001) original paper states that it is possible to differentiate between sensitive and MM maternal behaviours as related but distinct aspects of maternal behaviours. This review has assessed whether they have similar or differing effects on child outcomes.

Nine of the studies in this review researched whether it was MM or maternal sensitivity that had an effect on infant outcomes. All nine of the studies demonstrated relatively high levels of quality so all are included below for further consideration.

Several papers explored the independent contributions of MM and maternal sensitivity to a range of different outcomes: ToM (Meins et al., 2003), attachment security (Laranjo et al., 2008; Meins et al., 2012), feeding (Farrow & Blissett, 2014), externalising and internalising behaviour (Meins, Centifanti, et al., 2013), and some aspects of cognitive development and school readiness (Bernier et al., 2010, 2016). All seven papers reported that MM independently effected these outcomes when maternal sensitivity was

accounted for. Some of the studies found significant positive correlations between maternal sensitivity and outcome(s), but the relative effect size of sensitivity was either not as large as MM or significant associations were lost when MM had been accounted for (Bernier et al., 2010, 2016, Meins et al., 2002, 2003, 2012; Meins, Centifanti, et al., 2013).

Laranjo et al., (2008) found that sensitivity ( $p < .01$ ) and MM ( $p < .05$ ) were positively related with attachment security and the direct relationship between MM and attachment was partially accounted for by maternal sensitivity ( $p < .01$ ), suggesting that MM may be a pre-requisite for maternal sensitivity and combined account for 19.6% of the variance of attachment security. Farrow & Blissett, (2014) found that MM was predictive of more sensitive feeding behaviours and their results showed that MM is a pre-requisite for maternal sensitivity and MM is predictive of more sensitive and responsive caregiving behaviour. Meins et al., (2012) found that MM caregivers predicted infant attachment security independently of maternal sensitivity, they also found a significant link between appropriate MM and maternal sensitivity but there was no significant link with non-attuned MM and maternal sensitivity. Meins et al., (2012) propose that a sensitive response does not necessarily require the caregiver to have accurately interpreted the infant's internal state accounting for both the discrepancies and similarities with MM.

The research presented here suggests strong evidence that MM is an independent construct to maternal sensitivity in predicting infant outcomes. More research is required to assess whether MM is a pre-requisite for maternal sensitivity.

### *Stability over time*



Five studies assessed the stability of MM over time. Four of the studies (Laranjo et al., 2014; McMahon et al., 2016; Meins et al., 2003, 2011) scored relatively highly for quality and the fifth paper (Kirk et al., 2015), although scoring relatively lower (58%), was included for further consideration.

Meins et al., (2003) investigated the construct validity of MM over time and found that both the mothers' attuned and non-attuned mind-related comments were consistent at both 6 months and 48 months, thus demonstrating temporal validity. Kirk et al., (2015) found that both appropriate and non-attuned mind-related comments were stable between 3 and 7 months, which is a lot earlier than any of the other studies showing that MM can be assessed when infants are as young as 3 months old. Kirk et al., (2015) found that the only measure of MM that demonstrated temporal stability was appropriate mind-related comments, not non-attuned comments as reported in the other studies, however, this study only had a small participant group so this may account for this difference.

McMahon et al., (2016) found that maternal foetal attachment was associated with MM when their infants were 7 months and 19 months old. Mothers with higher foetal attachment scores in pregnancy made fewer non-attuned comments during play. Temporal stability was found in MM with free play at 7 months and the MM interview with mothers when the infant was 19 months old, showing validity across measures and time (McMahon et al., 2016).

The research in this review shows that MM is relatively stable across time (6-48 months) increasing the internal validity of the construct and the two MM measurements (interview and free-play observation).

## **Discussion**

The aim of this systematic review was to collate the available literature, review its quality and assess whether there is an association between MM and different developmental outcomes in pre-school children. All 20 studies included for review were observational longitudinal studies. The systematic search found the following outcomes were related to MM: attachment security, ToM, cognitive and language development, sleep, feeding and internalising and externalising behaviours. MM was found to have a significant relationship with all of the above outcomes. The different indices of MM, appropriate and non-attuned mind-related comments, were related differently to some of the above outcomes.

The majority of the papers reviewed in this systematic review confirmed Meins et al., (2001) study that parental appropriate MM significantly predicted children's secure attachment style. Two of the papers (Meins et al., 2012, 2017) supported the finding that non-attuned MM was related to the three insecure attachment styles. Non-attuned mind-related comments occur when the caregiver misreads their infant's internal states, or is not able to read their emotional expressions appropriately, which Meins et al., (2017) believed could impede the child's independence and the progression of the attachment relationship. This review found MM is a stable construct over time and indicative that there is a relationship between caregivers' being MM and attachment security in their infant. However it is important to keep in mind that this only accounted for some of the variance so other confounding variables also have an effect. This review shows that MM is more reliable than maternal sensitivity as a measure for predicting infant attachment security specifically the three subgroups of insecure attachment (avoidant, resistant and disorganised). This finding may be due to caregiver sensitivity originally being measured

in a longitudinal assessment (Ainsworth et al., 1974) but due to limitations of research and clinical work it is now measured in a short one-off assessment, consequently losing the focus of the appropriateness of the response from the caregiver (Meins, 2013). As MM is assessed in a one off quick assessment, it may be more beneficial for research and clinical settings in predicting attachment security of infants. Meins et al., (2017) explain this link between MM and attachment security as appropriate mind-related comments showing that the caregiver has accurately understood and labelled the infants internal state, whereas non-attuned comments do the converse. The mis-match of non-attuned comments could impede the child's independence and growth (Meins et al., 2017), subsequently affecting their developmental outcomes including attachment security.

MM has been described as a multi-dimensional construct (Meins, 2013) and its effect on the outcome of ToM development is complex. This review found that caregivers' appropriate mind-related comments in a free-play observation were related to the acquisition of ToM. Two of the studies also reported that these results were stable over differing ages of the infants, where different age appropriate measures of ToM were used (Kirk et al., 2015; Meins et al., 2003). More recent research has found that maternal MM, when using toys in the free play, predicted visual perception and false belief ToM, and when not using toys, predicted discrepant desires. The second indices of MM, non-attuned mind-related comments have been under-reported in these studies leaving it open to interpretation as why it has not been reported. Meins, Fernyhough, et al., (2013) were the only study to report on non-attuned mind-related comments and found that symbolic play was the mediating factor between these constructs. Although the results from this review show evidence that MM has an effect on the outcome of ToM, it highlights how both MM and ToM are multi-dimensional and further research is required to assess these

constructs and their stability over time. Laranjo et al., (2014) speculated that parents' appropriate labelling of infants mental states can help infants realise their perspectives and experiences are not necessarily universal, and help them to see that others have different minds, providing infants with the essential building blocks to be able to complete the ToM tasks. The exact mechanisms for this need further research and understanding (Laranjo et al., 2014).

Cognitive and language development, sleep, feeding and internalising and externalising are all other outcomes which have been assessed in this review. The findings on all these areas is limited as they are relatively new concepts and only small amounts of research have been completed. If a caregiver was MM with their infant they were more likely to have a more positive feeding experience (Farrow & Blissett, 2014) and their infants improved quality of sleep (Bordeleau et al., 2012). There has also been some tentative research that attuned MM has a positive effect on infant behaviour as reported by parents and teachers using the SDQ, especially in families from a low SES group (Bernier et al., 2016). School readiness has been found to be influenced by appropriate MM relating to language and cognitive abilities. Although this research is currently limited, it shows a high need for more research in this area investigating the links between MM and these outcomes. This could be specifically useful in thinking about interventions in high risk group such as those with low SES and improving the developmental outcomes for these children by improving caregiver MM.

### ***Strengths and limitations of the review***

This review is the first to complete a systematic review on the concept of MM. Only longitudinal studies were used so MM was not assessed retrospectively increasing

the reliability of the papers. The review used a quality framework to assess the quality of the reporting of the papers (Tooth et al., 2005). This quality framework was specific to the studies used as it measures longitudinal observational studies which is a strength, however it is limited as some of the measures are ambiguous resulting in interpretation biases. This quality framework only looks at the reporting of the studies, not the actual quality of the studies themselves although the researchers believe that if you increase the quality of reporting then consequently the quality of research will also improve. The results especially show that external validity is not strong so any generalisability to the general population needs to be done very cautiously.

As this is a relatively new concept, some of the papers in this review are related to the same longitudinal research and subsequently the same participants, reducing the external validity. Despite it not always being specifically clear, the author has taken care to try not to double report findings on the same outcome and only report new information from each paper.

### ***Clinical Implications and Future Research***

This review adds support to the view of MM as both an important and distinct construct in its own right, but also for its relationship with different developmental outcomes. Future research needs to concentrate on both appropriate and non-attuned indices of MM and their impact on outcomes on infants' development. MM is a relatively short assessment compared to that of maternal sensitivity and has increasing validity and reliability as a measure. One area that has been highlighted as an area for future research is to expand the measure of MM, so once the infant is older than 12 months, the two indices of MM (attuned and non-attuned mind-related comments) can be distinguished

(Meins et al., 2017). Research on at risk groups is needed specifically that of low SES and how MM can impact on infant outcomes, and it could be used as an intervention to improve outcomes in these at risk groups. More research needs to include fathers as relatively few did in this research and none of the studies discuss what infant outcomes are if one parent is MM and the other is not, which could account for some the discrepancies in the findings.

## **Conclusion**

MM is a relatively new concept, with limited research, however the majority of the papers reviewed in this systematic review confirmed Meins et al., (2001) study that parental appropriate MM significantly predicted children's secure attachment style. The systematic review found the following outcomes were related to caregiver MM: attachment security, ToM, cognitive and language development, sleep, feeding and internalising and externalising behaviours. The majority of the research found that MM predicted infant outcomes independently of caregiver sensitivity, with a larger effect size. More research is required to assess whether MM is a pre-requisite to caregiver sensitivity. Infant outcomes are complex and affected by many confounding variables, although a causal effect of MM is not researched, this review strengthens the predictive power of caregiver MM on infant outcomes.

## References

- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1971). Individual Differences in Strange-Situational Behaviour of One-Year-Olds. Retrieved from <http://eric.ed.gov/?id=ED056742>
- Ainsworth, M. D. S., Bell, S. M., & Stayton, S. T. (1974). Infant-mother attachment and social development: Socialisation as a product of reciprocal responsiveness to signals. In *The introduction of the child into a social world* (pp. 99–135). London: Cambridge University Press.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). *Patterns of attachment: a psychological study of the strange situation*. Hillsdale, J: Erlbaum.
- Arnott, B., & Meins, E. (2007). Links among antenatal attachment representations, postnatal mind-mindedness, and infant attachment security: A preliminary study of mothers and fathers. *Bulletin of the Menninger Clinic*, 71(2), 132–149.
- Bernier, A., Carlson, S. M., & Whipple, N. (2010). From external regulation to self-regulation: Early parenting precursors of young children's executive functioning. *Child Development*, 81(1), 326–339.
- Bernier, A., McMahon, C. A., & Perrier, R. (2016). Maternal Mind-Mindedness and Children's School Readiness: A Longitudinal Study of Developmental Processes. *Developmental Psychology*. Advance online publication. <http://dx.doi.org/10.1037/dev0000225>
- Biringen, Z. (2008). The emotional availability (EA) scales (4th ed). *Unpublished Manual*.

- Bordeleau, S., Bernier, A., & Carrier, J. (2012). Longitudinal associations between the quality of parent–child interactions and children’s sleep at preschool age. *Journal of Family Psychology*, 26(2), 254–262.
- Bowlby, J. (1988). *A secure base: clinical applications of attachment theory*. London: Routledge.
- Bowlby, J. (2005). *A secure base: clinical applications of attachment theory*. London; New York: Routledge.
- Chew, A. L., & Morris, J. D. (1984). Validation of the lollipop test: A diagnostic screening test of school readiness. *Educational and Psychological Measurement*, 44, 987–991.
- Corriveau, K. H., Harris, P. L., Meins, E., Fernyhough, C., Arnott, B., Elliott, L., ... De Rosnay, M. (2009). Young children’s trust in their mother’s claims: Longitudinal links with attachment security in infancy. *Child Development*, 80(3), 750–761.
- Cranley, M. S. (1981). Development of a tool for the measurement of maternal attachment during pregnancy: A comparison of first- and second-time expectant couples. *Nursing Research*, 30, 281–284.
- De Wolff, M. S., & Van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68, 571–591.
- Dunn, L. M., Dunn, L. M., Whetton, C., & Burley, J. (1997). *British Vocabulary Scale* (2nd ed.). Windsor, UK: NFER-Nelson.
- Farrow, C., & Blissett, J. (2014). Maternal mind-mindedness during infancy, general parenting sensitivity and observed child feeding behavior: a longitudinal study. *Attachment & Human Development*, 16(3), 230–241.



- Fenson, L., Dale, P. S., Reznick, J. S., Thai, D., Bates, E., & Hartung, P. (1993). *The MacArthur Communicative Development Inventories*. San Diego, CA. Singular.
- Flavell, J. H., Flavell, E. R., & Green, F. L. (1983). Development of the appearance-reality distinction. *Cognitive Psychology*, 15, 95–120.
- George, C., Kaplan, N., & Main, M. (1985). The Berkley Adult Attachment Interview. *Unpublished Protocol*.
- Gleitman, H., Fridlund, A. J., & Reisberg, D. (1999). *Psychology* (5th ed). New York: W.W. Norton.
- Goodman, R. (1997). The strengths and difficulties questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, 28, 581–586.
- Happe, F. (1994). An advanced test of theory of mind: Understanding of story characters' thoughts and feelings by able autistic, mentally handicapped, and normal children and adults. *Journal of Autism and Developmental Disorders*, 24, 129–154.
- Hogrefe, G. J., Wimmer, H., & Perner, J. (1986). Ignorance versus False Belief: A Developmental Lag in Attrition of Epistemic States. *Child Development*, 57(3), 567–582.
- Kirk, E., Pine, K., Wheatley, L., Howlett, N., Schulz, J., & Fletcher, B. C. (2015). A longitudinal investigation of the relationship between maternal mind-mindedness and theory of mind. *British Journal of Developmental Psychology*, 33(4), 434–445.
- Kochanska, G., Murray, K., Jacques, T. Y., Koeing, A. L., & Vandegeest, K. A. (1996). Inhibitory control in young children and its role in emerging internalization. *Child Development*, 67, 490–507.

- Kochanska, G., Murray, K. T., & Harlan, E. T. (2000). Effortful control in early childhood: Continuity and change, antecedents and implications for social development. *Developmental Psychology*, 36, 220–232.
- Laranjo, J., & Bernier, A. (2013). Children's expressive language in early toddlerhood: links to prior maternal mind-mindedness. *Early Child Development and Care*, 183(7), 951–962.
- Laranjo, J., Bernier, A., & Meins, E. (2008). Associations between maternal mind-mindedness and infant attachment security: Investigating the mediating role of maternal sensitivity. *Infant Behavior and Development*, 31(4), 688–695.
- Laranjo, J., Bernier, A., Meins, E., & Carlson, S. M. (2010). Early Manifestations of Children's Theory of Mind: The Roles of Maternal Mind-Mindedness and Infant Security of Attachment: Mind-mindedness, Attachment and Theory of Mind . *Infancy*, 15(3), 300–323.
- Laranjo, J., Bernier, A., Meins, E., & Carlson, S. M. (2014). The roles of maternal mind-mindedness and infant security of attachment in predicting preschoolers' understanding of visual perspective taking and false belief. *Journal of Experimental Child Psychology*, 125, 48–62.
- Lewis, V., & Boucher, J. (1997). *The test of pretend play*. London: Psychological Corporation.
- Licata, M., Kristen, S., & Sodian, B. (2016). Mother-Child Interaction as a Cradle of Theory of Mind: The Role of Maternal Emotional Availability: Effects of Maternal EA on Child ToM. *Social Development*, 25(1), 139–156.

- Lundy, B. L. (2003). Father– and mother–infant face-to-face interactions: Differences in mind-related comments and infant attachment? *Infant Behavior and Development*, 26(2), 200–212.
- McMahon, C., Camberis, A.-L., Berry, S., & Gibson, F. (2016). Maternal Mind-Mindedness: Relations with Maternal-Foetal Attachment and Stability in the first two years of life: Findings from an Australian Prospective Study : Maternal-Foetal Attachment and Mind-Mindedness. *Infant Mental Health Journal*, 37(1), 17–28.
- Meins, E. (1997). *Security of attachment and the social development of cognition*. East Sussex, UK: Psychology Press.
- Meins, E. (2013). Sensitive attunement to infants’ internal states: operationalizing the construct of mind-mindedness. *Attachment & Human Development*, 15(5–6), 524–544.
- Meins, E., Bureau, J.-F., & Fernyhough, C. (2017). Mother-Child Attachment From Infancy to the Preschool Years: Predicting Security and Stability. *Child Development*.
- Meins, E., Centifanti, L. C. M., Fernyhough, C., & Fishburn, S. (2013). Maternal Mind-Mindedness and Children’s Behavioral Difficulties: Mitigating the Impact of Low Socioeconomic Status. *Journal of Abnormal Child Psychology*, 41(4), 543–553.
- Meins, E., & Fernyhough, C. (2015). Mind-mindedness coding manual, Version 2.2. Unpublished manuscript. University of York, York, UK.
- Meins, E., Fernyhough, C., Arnott, B., Leekam, S. R., & de Rosnay, M. (2013). Mind-Mindedness and Theory of Mind: Mediating Roles of Language and Perspectival Symbolic Play. *Child Development*, 84(5), 1777–1790.

- Meins, E., Fernyhough, C., Arnott, B., Turner, M., & Leekam, S. R. (2011). Mother- Versus Infant-Centered Correlates of Maternal Mind-Mindedness in the First Year of Life: Maternal Mind-Mindedness. *Infancy*, *16*(2), 137–165.
- Meins, E., Fernyhough, C., de Rosnay, M., Arnott, B., Leekam, S. R., & Turner, M. (2012). Mind-Mindedness as a Multidimensional Construct: Appropriate and Nonattuned Mind-Related Comments Independently Predict Infant-Mother Attachment in a Socially Diverse Sample: Maternal Mind=Mindedness. *Infancy*, *17*(4), 393–415.
- Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants mental processes predict security of attachment at 12 months. *Journal of Child Psychiatry*, *42*(5), 637–648.
- Meins, E., Fernyhough, C., Russell, J., & Clark-Carter, D. (1998). Security of attachment as a predictor of symbolic and mentalising abilities: A longitudinal study. *Social Development*, *7*(1), 1–24.
- Meins, E., Fernyhough, C., Wainwright, R., Clark-Carter, D., Das Gupta, M., Fradley, E., & Tuckey, M. (2003). Pathways to understanding mind: Construct validity and predictive validity of maternal mind-mindedness. *Child Development*, *74*(4), 1194–1211.
- Meins, E., Fernyhough, C., Wainwright, R., Das Gupta, M., Fradley, E., & Tuckey, M. (2002). Maternal mind-mindedness and attachment security as predictors of theory of mind understanding. *Child Development*, *73*(6), 1715–1726.
- Oppenheim, D., Koren-Karie, N., & Sagi-Schwartz, A. (2007). Emotion dialogues between mothers and children at 4.5 and 7.5 years: Relations with children's attachment at 1 year. *Child Development*, *78*(1), 38–52.

- Pederson, D. R., & Moran, G. (1995). A categorical description of attachment relationships in the home and its relation to Q-sort measures of infant-mother interaction. *Caregiving, Cultural, and Cognitive Perspectives on Secure-Base Behavior and Working Models: New Growing Points of Attachment Theory and Research* 60, 111–132.
- Pederson, D. R., Moran, G., Sitko, C., Campbell, K., Ghesquire, K., & Acton, J. (1990). Maternal sensitivity and the security of infant-mother attachment: A Q-sort study. *Child Development*, 61, 1974–1983.
- Rothbart, M. K. (1981). Measurement of temperament in infancy. *Child Development*, 52, 569–578.
- Sharma, A. (2011). *Psychology and Development*. Pinnacle Technology.
- Tooth, L., Ware, R., Baln, C., Purdle, D. M., & Dobson. (2005). Quality of Reporting of Observational Longitudinal Research. *American Journal of Epidemiology*, 161(3), 280–288.
- Waters, E., & Deane, K. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behavior in infancy and early childhood. In *Growing points of attachment theory and research. Monographs of the society for research iin child development* (pp. 41–65). Oxford: Blackwell.
- Wellman, H. M., & Liu, D. (2004). Scaling of theory of mind tasks. *Child Development*, 75, 523–541.
- Wimmer, H., & Perner, J. (1983). Beliefs about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103–128.

Wolke, D., Summer, M., McDermott, Y., & Skuse, D. (1987). The feeding interaction scale. *Unpublished*.

Zeanah, C. H., Boris, N. W., & Larrieu, J. A. (1997). Infant Development and Developmental Risk: A Review of the Past 10 Years. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(2), 165–178.

**A study to explore how parents of a very or extremely preterm  
baby who require support from the NICU find building a  
relationship with their baby before and after being discharged  
home.**

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## **Abstract**

**Background:** As the survival rates of premature babies is increasing, more parents are experiencing Neonatal Intensive Care Unit (NICU). Previous research has looked at parents experiences of either being on the unit or after being discharged. This study focused on how parents found building a bond with their baby before and after being discharged from the NICU.

**Method:** Parents recruited from NICU (9 parents) were interviewed before and after (9-12 weeks) their baby was discharged. Interviews focused on how the parents built a bond with their baby. Data were analysed using Interpretative Phenomenological Analysis.

**Results:** Three super-ordinate themes were identified, highlighting the journey of how parents found building a bond with their baby. (1) *'Feeling lost and found'* shows how parents initially felt 'lost', felt impotent as parents and experienced intense emotions, which they tried to survive by detaching. After discharge, parents felt more confidence in themselves as parents and in their parenting ability, reflected on their journey and were now surviving. (2) *'This isn't how it's meant to be'* highlights how parents had missed out on important experiences and connections with their baby and quickly adapted their sense of normality to help cope with NICU. (3) *'Slowly falling in love'* describes how parents are learning to get to know their baby while they are on NICU and their prognosis is unknown. As the baby's health improves, parents get to know them better and start building the bond.

**Conclusion:** The analysis of parents' experiences highlights how traumatic the experience of having a preterm baby on NICU is and how parents struggled initially to



bond with their baby. Findings have implications for more psychological support on NICU and following discharge, ensuring continuity of care.

## **Introduction**

Pregnancy and childbirth should be a family centred time that is filled with positive emotions (Cox & Bialoskurski, 2001), and the first interaction between the baby<sup>3</sup> and parents is important in building a positive relationship (Bialoskurski, Cox, & Hayes, 1999). Babies who require intensive care support from a neonatal intensive care unit (NICU) as their health is in a life threatening condition, have a traumatic start to their life, and it can be a very stressful and difficult time for their parents (Obeidat, Bond, & Callister, 2009). The survival rates for premature babies has increased dramatically and the 15 million premature babies born globally each year are more likely to survive as the number of neonatal deaths since 1990 has reduced from 5.1 million to 2.7 million in 2015 ('WHO | Children', 2016). Babies who are born very preterm (28-32 weeks gestation ('WHO | Preterm birth', 2016) or extremely preterm (less than 28 weeks gestation ('WHO | Preterm birth', 2016) have also seen an increase in survival rates (Saigal & Doyle, 2008). As medical science continues to advance, and the treatment is progressing, the long-term developmental impacts are relatively unknown and seen as a 'moving target' (Glass et al., 2015). Parental involvement has a critical role in their babies outcomes, but there are high levels of maternal stress reported on the NICU, which also increases the likelihood of depressive symptoms in parents (Davis, Edwards, Mohay, & Wollin, 2003)

Attachment theory (initially developed by Bowlby, 1988) postulates that attachment behaviours are genetically programmed, and can be observed from birth onwards, with more stable and specific attachment styles and patterns developing between 6 months and 3 years of age (Bowlby, 2005). Bowlby reported that although organised attachment behaviour does not begin until 6 months, during the early months

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<sup>3</sup> Baby is used throughout as this is the language used by parents'

the baby begins displaying attachment behaviours and can differentiate their caregivers by smell and voice (Bowlby, 1988). Maternal bonding – the early emotional connectedness to babies - begins to develop prenatally, continues throughout the postnatal period (Salisbury, Law, LaGasse, & Lester, 2003), and has been related to subsequent infant secure attachment (Bicking Kinsey & Hupcey, 2013). Maternal bonding is also related to a higher quality of maternal parenting behaviours, such as responsiveness to a babies cues (Hornstein et al., 2006). It is believed that the first touch, including massage applied from parents to premature babies, strengthens attachment behaviour and facilitates reciprocal interaction (Ferber et al., 2005; Kavlak & Sirin, 2007). These initial interactions have been shown to improve the bond parents experience with their baby, which is important in the development of a secure attachment (Anisfeld & Lipper, 1983; Bystrova et al., 2009).

Maternal sensitivity is a parental way of being with their baby, is described as a pre-requisite to an infant forming a secure attachment (Ainsworth, Bell, & Stayton, 1971) and is observed from birth. Sensitivity is a mother's (father's or caregiver's) ability to understand the signals from their baby and to respond appropriately to these signals (Ainsworth et al., 1971). Research on mind-mindedness has highlighted the importance in the babies of caregivers responding to their baby with appropriate mind-related comments that show whether a carer is able to appropriately 'tune in' to what the baby may be thinking and feeling (Meins, 2013). From the literature on both maternal sensitivity and mind-mindedness, it is clear that how parents interact and respond to their baby in early life (especially the first twelve months) is important in the development of attachment styles, and therefore potentially to the child's longer term outcomes (Alhusen, Hayat, & Gross, 2013). Research has found that parents who have at-risk infants can be less

sensitive to their baby (Coppola, Cassibba, & Costantini, 2007) suggesting that being on the NICU can affect a parents ability to tune into their babies' needs.

Parents who have a baby that requires support from the NICU face significant challenges when building a relationship with their babies. The baby requires a lot of support from medical professionals and equipment (e.g. ventilation), which can impede the bonding relationship (Obeidat et al., 2009) and it is often unknown as to what the prognosis for the future will be or if the baby will survive. Parents often have to wait longer to first see their baby and depending on the health of their baby, they may not be able to hold them for a period of time (Al Maghaireh, Abdullah, Chan, Piaw, & Al Kawafha, 2016). The experience of NICU is known to be a frightening time for parents, and they often progress through a grieving process, mourning the loss of the pregnancy, and the birth that was planned but not actualised (Shah, Clements, & Poehlmann, 2011). Parents with a baby on NICU have expressed feelings of sadness, helplessness, disappointment, fear, frustration and anger related to the health of their baby (Obeidat et al., 2009).

To date, there is only a limited amount of research that has explored parents' experiences of the NICU and in building a bond with their baby. Mothers' and fathers' own perceptions and experiences of having a baby on NICU did not significantly differ (e.g. relationship with baby and perceptions as a parent) and were both equally problematic or worrisome (Tooten et al., 2013). It was found that in comparison with preterm babies, only parents of very pre-term babies expressed negative experiences about the development of their relationships, but this could be explained by them remaining on the NICU (Tooten et al., 2013). Research has found that for parents, interacting on different levels, such as talking to their baby, touching and holding is

important in the establishment of an early bond (Fegran, Helseth, & Fagermoen, 2008; Guillaume et al., 2013). Parents reported how important it is to have a clear knowledge of their baby's health, conditions and prognosis (Fegran et al., 2008; Guillaume et al., 2013). To continue to build on the current knowledge base, qualitative research is required to focus on the lived experience of parents.

Two reviews of qualitative research studies have been conducted, which focused on parents' experiences of having a baby on NICU (Al Maghaireh et al., 2016; Obeidat et al., 2009). These reviews found that being on the NICU was a stressful time for parents, with mothers vacillating between feeling included and excluded in their babies' care, and both mothers and fathers experienced psychological difficulties such as stress, guilt, depression and anxiety. However, while the current research has been able to identify some of the experiences at one point in time there is need for research to understand the process parents go through over time. These reviews highlight how a focus on parents' experience of building a relationship is needed.

There is a dearth of research that has focused on parents' experience of transitioning from the NICU to home with their preterm babies. Murdoch & Franck, (2012) described nine parents' experiences of going home with their infants eight months after discharge. The themes found were (1) apprehension about their babies health and losing the support of the medical team, (2) parents developed confidence as babies health improved, (3) responsibility for performing medical care dominated mothers' experiences, (4) awareness of babies needs was a learning process, (5) concerns about how normal their babies were and (6) gaining a positive perspective on experience. More recently, Adama, Bayes, & Sundin (2016) conducted a meta-synthesis of twelve studies exploring parents' experiences after being discharged from the NICU. The review found

that parents had difficulty assuming the parental role until after discharge and this could result in negative perceptions of infants and not having enough bonding experience in the NICU (Adama et al., 2016). None of the studies included in the meta-synthesis interviewed parents before and after leaving hospital, instead relying on retrospective accounts.

An area of focus of some of the research is to gain staff perspectives on parents' experiences. The research has found that when staff communicate with parents it helps parents feel more in control and have a clearer understanding of their babies care and improved self-confidence in caring for their babies (Nelson, 2003; Watson, 2011). Themes that emerged from staff perceptions of parents developing relationships with their babies were 'anxiety, shock, loss of control, and lack of feelings of competence as parents' (Twohig et al., 2016). Staff felt that specific psychological support for parents was lacking (Twohig et al., 2016). Staff support is vital to parents building a relationship with their baby and a focus on how parents find building a bond with their baby is needed, rather than a general focus.

To date, the published research on preterm parental attachment representations lacks detail on how parents form a bond with their baby, both before and after discharge from the NICU (While & Clark, 2014). Thus, in order to ensure the best outcomes for both parents and their babies it is important that there is more in-depth research to help inform NICU care. Many of the above studies have lacked a focus, used varying gestational ages or interviewed at differing times.

This current study will explore how parents of a very or extremely preterm baby who required support from the NICU find building a relationship with their baby, before and after being discharged home.

## **Method**

### ***Ethics***

This study was approved by the West Midlands–Black Country Research Ethics Committee (Appendix 1)

### ***Design***

A longitudinal qualitative study design was used, such that the participating parents were interviewed at two separate time points to collect in-depth accounts of their experiences to explore the development of their relationship with their baby over time. Interviews were conducted and transcripts were analysed using the framework of Interpretative Phenomenological Analysis (IPA, Smith, Flowers, & Larkin, 2009). The interviews were semi-structured and the first interview lasted an average of 46 minutes (range: 29-98) and the second interview lasted an average of 33 minutes (range: 18-39, Table 7, topic guidance: Appendix 5&6). For the first interviews, the topic guide focused on parents' experience of pregnancy, the birth, the journey through the NICU, relationship with their baby, and how they felt about going home. For the second interview, the topic guide explored parents' experiences of bringing their baby home, their relationship with their baby since coming home, and reflections on their time in NICU.

The NICU held a regular research meeting for parents who have had a baby on the NICU. The researcher attended these meetings to gain parental feedback on the proposed design, methodology and the topic guidance.

### ***Recruitment & Setting***



Participants were recruited through a West Midlands specialist NICU; the unit contained some of the limited number of intensive care beds in the region and two special care wards. The interviews took place either in a private room in the hospital, or in the parent's home, if safe and appropriate. Interviews were conducted between August 2016 and March 2017.

Potential participants were identified by the research nurses who worked on the NICU and knew the parents. Participants were approached if they met the inclusion criteria (Table 6) once their baby was on the pathway home, and in special care (a step down ward within the unit). Parents were given a study invitation letter (Appendix 2) and information sheet (Appendix 3), informing the onsite research nurses if they wanted to take part. For those agreeing to take part, the researcher then met with the parents to complete the consent process prior to interview (Appendix 4). Interviews were all recorded on an encrypted Dictaphone. Prior to the second interviews taking place, the onsite research nurses checked the health and wellbeing of the babies to ensure that it was still appropriate to contact the parents for the second interviews. The second interviews took place 9–12 weeks after discharge from the NICU.

To ensure anonymity of the quotes reported here, all identifiable information was altered or removed. Due to the nature of the research, parents were informed that family or close friends may be able to recognise a quote or experience, but the researcher would be mindful in the chosen quotes. Parents were all given the opportunity to review their transcripts and remove anything they did not want included-only one parent removed small sections of transcript.

### ***Participants***

*Table 7* shows the family information for each of the parent participants. A total of nine parents took part in the first interview, which included two mother-fathers dyads and two sets of twins. Seven parents took part in the follow up interview, including two fathers, and seven babies. Sadly one of the twins passed away, but parents wanted to complete the follow-up with the focus on their other baby. Two mothers (family number 5 and 7) were unable to complete the follow-up interview as their baby (one twin) required ongoing medical intervention from the hospital and a decision was taken, for ethical reasons, not to pursue a second interview. Three further mothers agreed to take part in the study, but one was discharged before the interview took place, one withdrew consent and an electrical malfunction with the Dictaphone meant that one interview could not be transcribed. The demographics of these recruits were similar to those who took part.

The sample size was guided by the methodological approach of IPA, which suggests between 6-8 participants to provide meaningful points of differences and similarity while not becoming overwhelmed by the amount of data generated (Smith et al., 2009).

*Table 6 Participant inclusion criteria*

| <b>Inclusion criteria</b>   |
|---|
| <ol style="list-style-type: none"> <li>1. Parents fluent in English so that they could partake in a qualitative, IPA interview.</li> <li>2. Infants on the pathway “home”, thus out of life critical care, on the special care unit.</li> <li>3. Infants had to have spent at least three days in intensive care and five weeks on the unit in total.</li> <li>4. Families for whom this was their first infant on NICU.</li> <li>5. Parents 16 years of age or older.</li> <li>6. Infants were very-preterm (28- 32 weeks gestation) or extremely preterm (less than 28 weeks gestation)</li> <li>7. Parents identified by staff as being emotionally able to cope with the interview</li> </ol> |

Table 7 Participant<sup>4</sup> and interview information

| Family No. | Participant name | Baby's name | Ethnicity     | First child | Gestation of baby (weeks) | No. of weeks since birth to the first interview | Length of first interview (mins) | No. of weeks between discharge and follow-up | Length of second interview (mins) |
|------------|------------------|-------------|---------------|-------------|---------------------------|---|----------------------------------|--|-----------------------------------|
| 1          | Dexter           | Sophia      | Black British | Yes         | 29.5                      | 5   | 29                               | 10   | 39                                |
|            | Zoe              |             | Black British | Yes         | 29.5                      | 5   | 32                               | 10   | 38                                |
| 2          | Jodie            | Ben         | White British | Second      | 29                        | 4   | 40                               | 9  | 26                                |
| 3          | Prisha           | Arnav       | Asian British | Yes         | 27                        | 10  | 36                               | 9  | 18                                |
| 4          | Luke             | Rose        | White British | Yes         | 23.5                      | 12  | 74                               | 12   | 38                                |
|            |                  | Isabel      |               |             |                           |   |                                  |  |                                   |
|            | Amelia           | Rose        | White British | Yes         | 23.5                      | 12  | 98                               | 12   | 36                                |
|            |                  | Isabel      |               |             |                           |   |                                  |  |                                   |
| 5          | Keya             | Hansh       | Asian British | Yes         | 28                        | 7   | 36                               | -  | -                                 |
|            |                  | Shaan       |               |             |                           |   |                                  |  |                                   |
| 6          | Amy              | Lauren      | White British | Yes         | 29                        | 6   | 44                               | 10   | 35                                |
| 7          | Danielle         | Isaac       | White British | Yes         | 29                        | 10  | 29                               | -  | -                                 |

<sup>4</sup> All names have been changed for anonymity of parents and their babies

### ***Data analysis***

IPA was used to analyse the data collected from the interviews with parent participants. The IPA approach was chosen as it explores in detail how individuals make sense of their lived experiences and the significance of their experiences within the context of their lives (Smith et al., 2009). Each transcript was transcribed verbatim and then read and re-read by the researcher. Exploratory comments were initially noted focusing on linguistic, descriptive and conceptual comments and then emerging themes were noted so that the analysis could move from descriptive to interpretive (Smith et al., 2009). The transcripts were first analysed individually, and then with their follow-up counterpart. The emergent themes were then analysed across participants to identify the shared themes and the distinctive voice (Smith et al., 2009). The researcher identified emergent themes within and across transcripts. To ensure the findings and themes identified are consistent with the data collected, academic supervisors-experienced in IPA analysis, were involved in theme exploration, identification, and naming. The initial themes were then sent to five of the parents, one of whom replied and reflected that the themes applied to his experience on NICU.

### ***Reflective Statement***

As the researcher I was aware that I am not a parent and I have no direct personal or clinical experience in relation to preterm babes or the NICU. The interviews produced strong emotional responses as I felt a deep sense of sadness and loss for the parents and their infants. I used a reflective diary and supervision with my academic supervisors to help understand these feelings and beliefs and to support my own emotional wellbeing. In completing IPA, I was aware of parallel processes and used others' coding of the data to ensure that I was not being too focused on my own experiences and feelings and missing alternative interpretations.

## **Results**

During the analysis of the transcripts it became apparent that parents went through a 'Journey of building a bond with my baby'. Three main super-ordinate themes were identified from the data: 'Feeling lost and found', 'This isn't how it's meant to be' and 'Slowly falling in love'. Within these super-ordinate themes, seven sub-ordinate themes emerged from the data (Table 8). The themes were both convergent and divergent, which is consistent with the IPA process (Smith et al., 2009) ensuring that experiences were heard even if all the parents did not have the same experience(s). The super and sub-ordinate themes capture the experiences of both mothers and fathers and the themes cut-across both time points (NICU and after discharge). The contribution of parents to each theme is shown in Appendix 7. The experience of having an infant on the NICU was variable, and despite the themes being presented separately, there is overlap between them.

**Table 8** *The journey of building a bond in NICU*

| Super-ordinate                  | Sub-ordinate                         | Description of Sub-ordinate theme  |
|---------------------------------|--------------------------------------|--|
| Feeling lost and found          | Impotence to confidence in parenting | Initially parents reported not having a voice and feeling as if they were not capable of looking after their babies. Over time, parental confidence grew, especially once their baby(s) was discharged.  |
|                                 | Survival to surviving                | The experience of having a baby on the NICU was described as ‘traumatic’ and it appeared that at times parents detached from the emotional journey so that they could self-preserve and survive the experience.  |
|                                 | What to do? How to feel?             | Having a baby on the NICU was a new experience to parents and very emotional, they expressed not knowing what to do, how to feel, and often feeling more than one emotion at a time.   |
| This isn’t how it’s meant to be | Altered normality                    | Having a baby on the NICU initially was a new and difficult experience for parents, however they expressed how it soon felt normal. External reminders such as others comments or going to another hospital made them realise how different their reality was. |
|                                 | Lost connections                     | All parents spoke about how they felt they missed out on crucial initial experiences with their babies, such as holding them as soon as they were born.  |
| Slowly falling in love          | Knowing me, Knowing you, knowing us  | All of the parents spoke about how it took a long time to get to know their babies and for their babies to know them, and this was reflected on by some after they left NICU.  |
|                                 | Living and loving on the edge        | Given the high risk of baby death on NICU, anxiety related to baby mortality or ill-health remained high after discharge and parents reported a sense of being extra cautious and not knowing what to expect with their babies health.                         |

## **Theme 1: Feeling lost and found**

The super-ordinate theme ‘feeling lost and found’ captures how parents felt about being parents to a baby in the NICU and once discharged home. The theme captures how initially they felt impotent as parents as the medical staff and equipment were the primary carers for their babies, and they were often too scared to touch their babies. The journey through the NICU was a very “traumatic” (Amelia) process for parents and they survived it in different ways. The emotions throughout the experience were often extreme and contrasting - extreme joy at having their babies alive, but extreme anxiety that they might lose them. Throughout their NICU journey, parents’ confidence in themselves as parents and in their parenting ability grew; they began to have more belief in their babies’ chances of survival and the emotional turmoil began to calm.

### ***Impotence to confidence in parenting***

All parents described initially struggling to feel like they were parents, with the medical team taking the primary care roles. Parents reported feeling that they needed permission to parent their baby or even to hold them. During pregnancy, mothers reported the belief that they weren’t being listened to by the doctors and they knew “something isn’t right” (Amelia), “even on the scan they said no these aren’t contractions, but I just knew. I knew I was having her” (Zoe). This feeling of not being believed could have resulted in mothers’ feeling that they could not trust their motherly instincts. Mothers reported high levels of guilt about not being able to protect their infants in their womb, potentially making them feel impotent:

*I think I don’t know I just I felt a bit guilty for him like he should have been inside me, if you know what I mean, he would have been safe and everything and the fact*

*that he's out his little body couldn't cope with all the you know the pressure of being out into the world (Prisha)*

All parents expressed a feeling of lack of control once the baby was born. All parents had their babies taken away immediately for medical intervention and were not allowed to hold their babies-“you just feel like a spectator, you're not a parent I don't think” (Luke). This lack of ability to care for their baby and feeling like they couldn't pick up or hold their baby appeared to reduce their feeling of ability to parent:

*I couldn't just pick him up when I wanted to, and I hated that and I felt like I was always being not like I was told that I couldn't because they never say that to you but you feel like you can't do these things and the wires really intimidated me so I was always worried about even changing his nappy because of the wires. (Danielle)*

All parents described how when they were able to hold their babies “that's when I felt like a mom” (Keya) and they felt more like a parent, and the development towards feeling like a parent happened gradually. Through the interviews parents discussed not feeling like they had a voice over the medical staff - “you kind of want to say I don't think this is right, but you don't have that voice” (Amy). The physical health of the baby was understandably of paramount concern, but mothers described the motherly instinct to protect their infants and there appears to be unspoken sadness that they were not able to:

*there was a time when I was holding him and he did start to have desaturation kind of the nurse kind of straight away took him straight off because they have to do that kind of thing, but it but it felt it sometimes it just feels like very quick and*



*you get that natural instinct of protectiveness over the baby that they have just taken away from you, (Jodie)*

The feeling of parental impotence was increased by parents lacking feedback from their babies and feeling unable to understand their signals. Parents became reliant on the medical equipment to pick up on the cues and signals from their babies:

*It's difficult to feel you are able to comfort her when she's having a bit of a moment when her heart rate goes up or she's too hot or and things like that and, I I rely on the ECG lead that shows her heart rate to know that what I am doing is settling her because I can't see it on her face (Luke)*

Parents searched for ways in which they could feel like they were a parent to their baby. Expressing milk enabled mothers to have some more control. Jodie spoke about how important it was to her to be able to do something to provide for her son:

*I felt was it was something that I really wanted to do and the longer that we have been here the more important it has been to me because it feels like it's the only thing I can do, because all the doctors and all the machines and things that are helping to look after him so this is kind of the one thing that I can provide for him, so it was really it was more important this time that I express and I tried to get enough for him (Jodie)*

As parents progressed through the NICU, they felt that their confidence grew and they felt more like parents. Amelia described how, even though she was struggling to breastfeed it did not feel that this was affecting her own confidence as a parent:

*oh you know we should really be sinking or swimming with either breast or bottle feeding but to be honest she's too lazy, she's like I'm going to have a*

*couple of sucks on your nipple and then I am going to give up so they are like ok we will see how she goes (Amelia)*

This increase in confidence is shown by parents not feeling like they have to ask permission to parent their infant anymore. Keya described how she became more involved in ‘cares’ (NICU term for physically caring e.g. changing their nappies, washing, and feeding) and this made her feel more like a parent:

*yea yea I do their cares, both of their cares as much as I can (laughing) um again that’s made me feel more like they are mine and I am a mum it makes you feel more sort of involved, (Keya)*

When parents began to think about going home they reported feeling worried about whether they were competent parents again, questioning “am I ready for this” (Zoe). Once they were home it appeared parents “realised she didn’t scare me because we kind of got to know each other” (Amy); parents had learnt to “trust your instinct” (Jodie). Parents had established a routine and they also grew in confidence that although it wasn’t perfect they would get there and more joy was evident in their descriptions:

*so the first night was kind of like, I think were weren’t we just didn’t really know what to do, like we know she needs feeding, we know she needs changing but you kind of look at her and ok, what do we do now, like we’re in the privacy of our own home, like we can change her bum whenever we like, we could play with you (Amelia)*

### ***Survival to surviving***

Having an infant on the NICU was described as “torture” (Amelia) and parents appeared to go into a survival mode describing how “I just survived I guessed

(laughing)” (Zoe), showing how tough it was, but being anxious about admitting it. Some parents spoke about how they didn’t remember certain experiences, especially at the beginning and even expressed that they had detached from the experience. Amy spoke of not remembering certain points-“umm at the moment I couldn’t tell you because I can’t remember the past 6 weeks” (Amy) and described living in the moment and not thinking about what had happened:

*Like you don’t even remember any of those scenarios because you’re trying, because you’re living in the moment with with somebody who today can be fine and then tomorrow can’t be fine, and it’s so it’s that it’s a very mindful sort of space (Amy)*

At first, parents struggled to be around or touch their babies, possibly showing that they struggled to cope with the emotional experience and the concerns their baby may not survive. Luke reflected on how he initially struggled to be with his twin girls and initially detached from them:

*“I struggled to be in there at first, I struggle to be in there I struggled to be near them I struggled – I struggled just to eh eh I stuck with the focuses of my wife, and being by her and possibly I used that as an excuse because she was told to take it easy for a couple of days erm to not be around them erm I have to admit but yea it took a few days to touch the incubator that they were in, urm it took a few days to want to sit and look at them” (Luke)*

Some parents did not buy anything for their infant in the fear that they would not make it home - “I didn’t buy anything I didn’t do anything” (Prisha). At points in the interviews there was a deep feeling of sadness being conveyed-but the words spoken in interview were no more than mere descriptive accounts, which possibly indicated

parents' detachment from the deep emotions and a mechanism to survive the process of having a baby on NICU. In the follow-up interviews some parents spoke more about emotion "just used to cry sometime" (Prisha), which was not initially disclosed.

In the follow-up interviews, parents were able to reflect on the journey and Amy retrospectively reflected on how emotional the journey had been and how she experienced it differently at the time on the NICU. Once again, these experiences captured how parents might have detached to survive in the face of intense emotional experiences of being on NICU:

*retrospectively you realise that the journey has been different and I found the very first baby picture that the nurses had taken um and I realised how small and alien like she was and that upset me because she looks like a baby now and it's taken four months to properly get over that. I think retrospective of the journey I think is much more frightening than the journey um because you realise how thin that line was between life and death and how close it was (Amy – follow up)*

### ***What to do? How to Feel?***

Throughout the journey, parents appeared to be unsure how to feel and what to do; the situations they found themselves in were not ones they had ever imagined they would be in: "I just didn't really know what to do or how to feel, I didn't know whether I was coming or going" (Danielle). The intense emotions appeared to begin with pregnancy complications, "because I bled um every time I went to the toilet I had that big fear factor um and I was always checking for blood" (Amy). Parental anxiety and fear continued throughout their babies stay in the NICU, fluctuating dependent on their babies' physical health. At times, parents felt able to express these emotions but at

others they were only able to describe their journey and their descriptions lacked emotion, again giving the impression of blocked feelings.

Parents spoke about their split emotions of initially seeing their babies, “It felt - - wonderful but utterly terrifying at the same time” (Amelia). Prisha captured how parents described feeling mixed emotions as they were pleased that their babies were alive, but terrified as they knew they were born very early:

*It was very, it was such a relief, I was happy, I just didn't want him in that stage, I'm grateful that he was here, but it was a scary moment to see him in the incubator with everything on him, you know, it was good and it was not that good yea. (Prisha)*

Parents spoke about how at differing times they realised how emotional the journey was. Danielle describes the first night she went home as the hardest thing and she was “inconsolable”. This was the first time she had let herself experience her emotions as she was in survival mode before:

*going home was the worst I think that's when I had probably - my lowest point, I think I just cried all night long, but it was like I had no control of the tears they were just coming. Whether it was just a come down from giving birth, or the fact that he was here I don't know but I was just inconsolable the whole night. It was terrible. It was like the most horrific night I have ever had. (Danielle)*

The parents described how they didn't know whether their babies felt any pain, as they knew the procedures that they were having were painful but they couldn't see it in their faces. Jodie spoke about how worried and upset she felt as she didn't know if her baby was in pain and that there was nothing she could do to help, “I think that's

more me, because I get I don't know how much, he never kind of shows that he feels anything" (Jodie).

The contrasting emotions parents experienced continued once parents were told that they were able to take their babies home—"it's amazing and again terrifying everything is just like oh my god I get to take this baby home do they know I'm not qualified (laughing)" (Amelia). It was a shock to all of the parents, but they all expressed relief:

*I was like oh my gosh this is real, it all started to sink in, and like it was like what do we do now? (laughs) but yea I was happy to bring her home though, it was a relief, (Zoe)*

Once home, parents felt more settled in their emotions and the overall feel of the interviews was happier with less sadness overshadowing them. There was still anxiety about the future. One family that had received emotional/psychological support by the NICU felt isolated and lacking support:

*so again we are back to being quite isolated and um a little bit a little bit stuck sometimes with not knowing what to do, well not necessarily knowing what to do but how to deal with what we may be thinking or feeling at the time. (Amelia)*

### *Summary of theme 1*

'Feeling lost and found' shows how parents go through a journey of initially feeling 'lost', parents felt like they needed to ask permission to parent their babies, they felt impotent and scared. Parents felt 'lost' as they did not know what to do or how to feel and experienced intense emotions, which they tried to survive by detaching, forgetting or living in the moment. Throughout parents' journeys through NICU and

including transitioning home, parents began to feel like they had ‘found’ themselves, they felt more confident as parents, especially once their baby was discharged home. As their babies progressed and were able to go home, parents reflected on their journey and conveyed a sense of feeling, happier and a positive shift from survival to now surviving.

## **Theme 2: This isn’t how it’s meant to be**

The super-ordinate theme of ‘this isn’t how it’s meant to be’ focuses on the experience of having a baby in the NICU and how any sense of normality gets changed quickly. Parents talked about how they missed out on those initial experiences with their babies and how their journey was very different to how they expected it to be. ***Altered Normality***

Parents appeared to change their sense of normality as their reality was completely different and the experiences they went through quickly became ‘normal’. This change to a new normality was highlighted by Amelia who described how quickly she altered her sense of ‘normal’:

*do you know what, after the first few days we re-calibrated ok, and when we say we’re ok we’re not ok, we’re somebody else’s shit, that’s what our ok is but for us to know that that’s that then that’s fine. If that’s our ok are we still at that level then we will deal with that, but you know I think it’s made us stronger as well. (Amelia)*

NICU is a unique experience that none of the parents had any prior experience of, Amy describes how “it’s really, really odd experience, and then you are confronted for the first time with an incubator” and how it wasn’t “normal”. However, all parents spoke about how it quickly became normal even expressing milk, “was just normal, it’s like a routine now, its normal” (Prisha).

Parents appeared to learn what was normal for their babies, and they adjusted to the NICU environment. It was external cues that seemed to bring parents back to reality, “when she was at the children’s hospital she was put back in an incubator because the children’s hospital is scared of tiny babies, they are petrified of them”, (Luke). Luke’s experience highlights how parents can often be reminded of how unwell their infants are. Jodie described how the external cues extended to when the infant has gone home (but was still poorly), reflecting on how “normal” it had become in the NICU and didn’t feel as scary:

*then when we got taken up to intensive care and they were there were big children like that were really really poorly and it was kind of it was a lot scarier than it ever had been in the neonatal really (Jodie)*

Zoe reflected on the time, when her infant was ready to be discharged, she could just hold her as she was no longer attached to any wires, and it felt normal as compared to something either not-normal or less-normal beforehand:

*but they’ve taken it off now and to be honest when I came in and they were all off I was like oh my gosh, but you know what its brilliant because I actually feel like, I’m holding a baby now. I know that sounds a bit you, I mean because she’s always tied up to something and I actually picked her up and walked around with her today it was really, really nice (Laugh) (Zoe)*



Once parents were able to take their babies home, Dexter highlighted how “it’s trying to just get into normal stuff”, suggesting how parents were now trying to find a sense of normality. All parents reflected that once home it was difficult to manage others’ expectations as the babies were so small they do not look their age:

*pushing her around in the pushchair, as you do, and everybody goes ohh little baby and even walking into the hospital ohh little baby how old is she oh she’s 4 months, no she’s not, yes she is believe us we know (Luke)*

By the follow-up interview some of the parents had managed to move into a place of acceptance, “so my norms are very different and I have resisted thinking in that kind of idealistic way thinking this will be how it will be because I don’t know how it will be” (Amy). It was only others’ expectations that challenged the newly developed norms for parents, or parents own fears that their babies might not meet developmental milestones.

### ***Lost connections***

All parents described how they felt they had missed out on key experiences with their babies. The sense of loss of experience began during pregnancy, Amy reflected how she realised “I’m not ever going to experience that I’m never going to get to that full term thing, I don’t know what I would of looked like” (Amy). All parents felt that they lost the initial chance to hold and be close with their babies and Jodie’s quote represents all parents’ experience that they had missed out on the experiences they had expected or dreamed of:

*It was horrible, the first, because when I had my other son the first thing they did was put him on my chest and I got to feed him and hold him and meet him and, but this time the baby was gone – (crying) and I we kind of obviously we knew why he was gone but it felt like there was a big something missing (Jodie)*

Parents struggled to hold their babies initially and some were unable to due to their physical state. Prisha described how she felt like she couldn't hold her son for a while, but now felt safe holding him. The repetition in the language, and seeking reassurance, showed that she was anxious to hold her baby and communicated a regret about missing out on that experience:

*It, it was hard, it was hard, but I felt like he's safer in there, if you know what I mean, he's safer in there. I will stroke him, I will change his like his nappies, I will do everything for him in there, but now I'm like ok, come on lets go yea its yea it's good, it's good to hold him now. (Prisha)*

Due to the medical equipment used to keep the babies alive, parents could not completely see their infant's face. Danielle spoke about how she struggled not knowing what her infant looked like, which seemed to affect the bond she experienced:

*we could only see his lips, we still didn't know what he looked like. And it was like that for about 4 days, we didn't know what he looked like, so I struggled with that. I mean the more I held him, the more I felt sad – I think because I was just like, this isn't how it's supposed to be (Danielle)*

Throughout their journeys, and due to necessary medical treatments, there were days that passed when parents were not able to hold their infants, and this seemed to present as another barrier to building relationships and parents reflected on how different this might have been if they had been at home:

*you are not supposed to really disturb them if they have had a few tests on the day because they are a bit unsettled, so a couple of days I have not been able to handle them, pick them up or have cuddle time. Whereas if I was at home I would you know they are there all the time, they have no machines you know,*

*there is nothing stopping me from that kind of closeness whereas here obviously you have to be so careful if you know they are not well. If they have too many machines, if they have had a blood test um so I think um it would have been a lot quicker if I was at home to develop that bond. (Keya)*

The majority of parents spoke about how difficult it was leaving their babies in the evening. Night time was a period when none of the parents would have experienced being with their infants and this is likely to have affected their sense of developing relationship:

*it almost doesn't feel, when we are at home we don't have a baby to look after, we can't take a baby home, there's no crying in the middle of the night to be fed, there's no anything and - that will be that will be an adjustment that I miss at the moment, because I went home last night (...) and I just felt lost, I didn't feel right and I think it was because I didn't have them or one of them and I think were both struggling with that at the moment (Luke)*

Once the parents and babies arrived home they were able to make new experiences by spending time with their babies and doing “normal” things. A few of the parents spoke about how being on the NICU allowed them to get to know their infants before bringing them home and saw this as a real positive: “yea you missed out on it, but equally you, you also got to spend a lot of time with them that you would never of if they were in your tummy” (Amy).

### *Summary of theme 2*

‘This isn’t how it’s meant to be’ highlights how parents quickly adapted their sense of normality to help cope with their NICU experience. This new ‘normality’

appeared to be their way of coping, but the reality of their situations came to light in different environments and by managing others' expectations. All parents spoke about how they felt they missed out on important bonding experiences.

### **Theme 3: Slowly falling in love**

The super-ordinate theme of 'slowly falling in love' describes how parents and babies took time to build a relationship with their baby and how they really get to know each other over time. The time this took was affected by the intense fear parents felt of losing their babies and how their babies' lives were often 'on the edge'.

#### ***Knowing me, knowing you, knowing us***

A common theme throughout all of the interviews was that it took parents time to get to know their babies and build a relationship, which was also dependent on the physical health of the baby. Amy spoke about how both she and her partner realised they didn't have a connection with their baby at first, but were only able to reflect on this in the follow-up interview:

*he said this as well, is at the time you don't have that connection, you know that you have a baby but you don't have that connection and his first priority was me and so your kind of you're going down to see this third person, and then we kind of go back up together so you're not as connected as you would be now with her*  
(Amy)

For the babies who were really unwell and the prognosis was unclear, parents described how they struggled to be around them, touch them or even look at them. Amelia described her initial feelings:

*for the first few days I had never even approached the incubator properly, I wouldn't even touch the incubator let alone put my hand in to touch them. I think they were two weeks or more old before I actually changed a nappy.*  
(Amelia)

All parents spoke about how they couldn't initially hold their babies and how this was difficult for them. Most of the parents struggled to talk about how it felt emotionally to not hold them and found it much easier speaking about the happiness of being with them:

*It was amazing, yea we took pictures lots of pictures like every moment every stage we have memories, we have pictures and it's crazy it was amazing to hold him, I didn't get to hold him for a long time, I don't know, because he had so many stuff like a lot of stuff in him he just looked so vulnerable, and I was like if take him out I will feel like anything can happen because you know so when he got better, like still he had his stuff in but and the cannula and everything but when he got better a bit I felt like I could hold him. It was a couple of weeks down the line yea (Prisha)*

Parents described how they overcame the fear of touching their infants. Dexter was very positive throughout his interview, but the stuttering in his language was perhaps an indication of an unspoken emotion that he was struggling with:

*Umm e o because she's so very little, so so afraid to touch her, so so afraid, but when I touch her like oh god you know, like ok, is this real, you know I'm like oh she you know, cause I I I just, decided ok fine you know she needs my love, my attention so I have to be able to fuss her - that's what I feel, she needs all the*

*necessary umm attention so, because I couldn't really carry her you know*  
*(Dexter)*

Parents were shocked at how they could see personalities in their infants when they were so young, “we did get to start to see their own personalities which was surprising, we didn’t expect them to be so, so human” (Luke). All parents spoke about the support that they needed from the nurses, but either explicitly said or eluded to the fact that being in hospital created a barrier to bonding:

*It's – it's different, all the, all the same emotions that I had first time and there, all the same desire to pick them up and have them close, I was I was always very much like that very much an attachment parent, wanting them close but there is the barrier of being in the hospital in the things like when he's being fed because he because he's still so small you kind of have to wait until you can pick them up and speaking to the physiotherapist saying that they have to be held in a very very certain way to help their muscles so to so to not hurt them and - so kind of all those things like taking them and picking them up, it's always remembering all of those little things, rather than just having the natural, pick them as you would a full term new born and and going home at the end of the day is always very very difficult (Jodie)*

The improved, mutual, understanding between parents and babies developed as babies transitioned through the NICU and continued to develop once babies had been discharged. Parents, who initially thought that they were bonded with their infants in NICU, reflected on how they felt more bonded once home. It is possible that at the time parents couldn't accept that the bond wasn't as they wanted in NICU as it might have been emotionally too difficult:

*The last sort of two weeks or so he has been feeding he has been a lot more alert and that has made it a lot easier a lot kind of nicer to feel like you are closer and more bonded with him (Jodie).*

Zoe spoke in both interviews how she was scared that she wasn't bonded  
*and I just started to get really like ahhh why she wouldn't look at me, id talk to her and her head would be to the side and I thought oh is this normal. And then I just thought, what if she doesn't like me (laughing) you know I thought all sorts of stupid things and I thought oh gosh may I haven't got, maybe we haven't got a bond as much as I thought we had (Zoe)*

When parents describe their infants' personalities in the second interview they did it with more confidence and there was evidence that relationships had changed and they had really got to know one another:

*I would have to agree with cheeky, really really, and precocious she is such a princess, she thinks her name is princess she isn't known as x2 and she thinks she is princess and she responds to that. And so many things that she does is really like oh spoilt, but that's fine, for now, umm I think she's like her sister you know, (Amelia)*

### ***Living and loving on the edge***

All parents spoke about the fear of their own baby's mortality in differing extremities throughout their journey through NICU, and how difficult it was to love their babies with this fear overshadowing them. The fear of losing their baby began in pregnancy-a few of the mothers spoke about how they needed to get to the 'magic' 24-week mark so that their babies would be viable:

*I remember saying to the midwife, when they were not too far from the delivery, if they breathe for an hour it still counts right cause I know if your born before 24 weeks and they don't breathe they don't get a birth certificate, you don't get to register the death you don't get anything, you just get, it's like they never existed. – and I the thing that kept me going and really wanted to get to 24 weeks was even if they don't make it, I want the world to know that they existed (crying) - - I didn't make it to 24 weeks but they are still here and it's just been hell since then (Amelia)*

Three of the families in the study, during their babies' time on the NICU, were told at least once by a Consultant that there was nothing more they could do for their baby and they would die, but then the babies' prognosis changed. Parents shared their horrific journey through this and how close they came to losing their babies:

*first they were like ok the extent of the bleed is very severe and he may not make it and um you know they even talked about giving him compa compassion care like let him go slowly, and I was like no, it's not an option for him to go, he's a, there's a reason why he's here now so um I did we did fight quite a lot with the doctors for him to be here (Prisha)*

The health of the infants changed throughout their respective stays in hospital and all parents spoke about how hard it was to keep hope and how they had to live for the day as they didn't know how their babies would be:

*he's doing er he's doing well and I think kind of the thing is with with neonatal is that you can't be, you can't be sort of over enthusiastic with telling you how he is because you know today's he's, only had very very few desaturations but tomorrow may be very different and kind of they never kind of say whether it's*



*good or bad, they just say he's doing this now, it's hard to know, yea and it's hard to, my husband finds it harder than me it's hard to be happy for the things that are going well because you always worry that it might be different tomorrow, and I'm just trying to go, well this is this today today has been good, he's having a good day today, and well just think about that, tomorrow will happen tomorrow (Jodie).*

Once home, parents described how anxious they felt and often checked their breathing, but started, slowly, to trust their own instincts:

*it's like little things I think the first few weeks I probably did panic a little, by just making sure my gosh is her temperature ok, is she breathing (laugh) you know kinda thing so yea I suppose you didn't have anyone to kind of double check with you know, but then I just, I think after the first few weeks I kind of just said you know what you've got to chill out and go with your instincts which is what I did I suppose. (Zoe)*

Jodie described how parents' anxieties were very real and how their physical health was not certain even after discharge

*when we tried to feed him at the children's hospital he started going blue and floppy which has never happened in the neonatal and was terrifying. And he ended up being hooked onto oxygen and NG tubes again and put back in and taken into the hospital (Jodie)*

Retrospectively, parents reflected on how difficult the journey was. Some parents described not having realised how difficult it was until they arrived home with their baby and had time to reflect, this is likely to be because it was such an emotionally traumatic time:

*a few moments like that where retrospectively you realise that the journey has been different and I found the very first baby picture that the nurses had taken um and I realised how small and alien like she was and that upset me because she looks like a baby now and it's taken four months to properly get over that. I think retrospective of the journey I think is much more frightening than the journey um because you realise how thin that line was between life and death and how close it was (Amy)*

### *Summary of theme 3*

‘Slowly falling in love’ describes how parents are learning to get to know their baby whilst they are on NICU. The baby’s prognosis, especially initially, is unknown and their health fluctuates, with parents not knowing how they are going to be day to day. As the baby’s health improves, parents get to know them better and start building the bond, which continues when they go home.

## **Discussion**

This study explored how parents found building a relationship with their babies before and after leaving the NICU. The IPA analysis resulted in rich, in-depth accounts of parents' lived experiences and their respective and collective journeys. Three super-ordinate themes were identified of 'feeling lost and found', 'this isn't how it's meant to be' and 'slowly falling in love', together with seven subthemes. While the themes have been presented here as discrete and separate, this is not to ignore the possible overlap and interaction between themes. Nonetheless, the themes, as reported, are considered to represent more subtle, separate experiences that, together, provide a more comprehensive view of how parents found the journey of building a bond with their babies when they needed NICU and once discharged home. The themes found here correspond to the existing literature on parents' experiences of having a baby on the NICU, as well as providing a more focused and novel insight into parents experiences over time, specifically over the entire journey of the NICU and in transitioning home.

Within the theme of 'feeling lost and found' the feeling of parental impotence, especially immediately following birth, when parents were not able to hold or care for their babies, was strong for all the parents and is supported by previous research (Al Maghaireh et al., 2016; Obeidat et al., 2009; Twohig et al., 2016; Watson, 2011). As parents began to do more of the caring, they got to better know their baby as an individual, and started building reciprocal connections; confidence as a parent increased, subsequently improving their self-report of their bond with their baby. The increasing parental confidence occurred on a continuum, which developed more when parents were able to take their babies home and when they became the main caregivers, finding a stronger sense of themselves as parents. Family centred care principles have been highlighted in the neonatal care NICE Guidelines, (2010) and were used within the

NICU that participated in this research. Despite this, parents still felt impotent as parents, scared to be near their babes and do their 'cares'. The current study highlights the importance of staff encouraging and supporting parents to hold, comfort and to do the 'cares' for their babies as soon as possible.

Following the birth of their babies, parents struggled to survive the experience of NICU, which was linked to the health of their baby. Parents experienced conflicting emotions of a deep sense of sadness, joy and fear, with parents reporting not knowing what to do or how to feel. At times, parents appeared to detach from the process and live in the moment, forgetting events or losing a sense of time. Some parents were only able to, or felt only able to, reflect on their NICU experiences once their baby had been discharged. It is possible that parents may have been too scared to form a bond with their babies at a time when they were unsure whether they would survive, so they were trying to emotionally protect themselves. Parents' detachment from the experience has been found in limited previous research (Obeidat et al., 2009). The in-depth and lengthy narratives of some parents, accompanied by a sense of deep sadness could be evidence of them trying to make sense of and processing the traumatic experience(s) in the interview. Research on post traumatic-stress disorder (PTSD) in women following a traumatic childbirth, has found that mothers experience detachment, intense emotions and need to talk about their experience, similar to the current findings (Beck, 2004). Prevalence rates for PTSD are higher for mothers with at-risk babies (Alcorn, O'Donovan, Patrick, Creedy, & Devilly, 2010; Kim et al., 2015) but talking and processing the event is known to reduce the risk of developing PTSD (Feldner, Monson, & Friedman, 2007). The study, along with a recent survey reporting that 44% of mothers experience flashbacks to their time on the NICU (The smallest things, 2017),

highlights the need for specialist psychological support for pre and post discharge (The smallest things, 2017).

Within the second super-ordinate theme of ‘this isn’t how it’s meant to be’ parents reported ‘lost connections’; a sense of having missed out on important experiences with their babies, such as being able to hold or care for them and their new individual sense of reality reflects this. These feelings of lost experience and altered normality links with past research (Shah, Clements, & Poehlmann, 2011) which reported that resolving grief is important as it is associated with facilitating a secure attachment in the baby. Parents quickly reported a sense of altered normality, and the NICU environment became ‘normal’, which could be linked to parents adjusting to try and survive, which links to the first super-ordinate theme. The current study highlights how the lost connections parents have experienced affect their sense of bonding with their baby, and staff need to help support parents to make as many new connections as possible, along with caring for the babies’ physical needs.

The final super-ordinate theme, ‘Slowly falling in love’, reflects how the physical health status of a very pre-term baby appears to have an impact on the creation of a bond with their parent; parents found it difficult to build a relationship with their baby when they were terrified that they may not live. Some parents were so scared that they would lose their baby that they were unable to prepare to bring their baby home. The loss of one of the babies in this study, and two of the follow-up interviews not commencing due to the babies’ ill health, highlights how realistic parents’ concerns were. Over time, parents began to believe that their babies, even when on NICU, may survive and they started to tentatively build a bond with their baby, some more consciously than others. The theme ‘slowly falling in love’ with its emphasis on parents

slowly getting to know their infants is a theme not consistently found by previous research (Feldman, Weller, Leckman, Kuint, & Eidelman, 1999), which may be due to this research only including very preterm babies and/or the IPA in-depth lived experiences analysed using the qualitative framework of IPA. Parents concerns over their babies' physical health reduce as they progress through the NICU but remain post discharge leaving them anxious about leaving the house and attending baby groups. Parents felt unsupported once discharged and highlights how parents require support throughout their journey through the NICU, but especially once they have been discharged. The findings from the current study confirm and expands previous research that retrospectively found the bond increased once parents were able to take their baby home (Adama et al., 2016), highlighting that it is a process through the NICU that continues after transition home.

Parents begin building a bond with their baby from pregnancy (Darvill, Skirton, & Farrand, 2010) and a parent's bond, reciprocity, maternal sensitivity and mind-mindedness all impact on the development of a baby's attachment style (Ainsworth et al., 1971; Bicking Kinsey & Hupcey, 2013; Hornstein et al., 2006; Meins, Fernyhough, Fradley, & Tuckey, 2001). In this study some of the barriers to parents building a bond with their babies were their babies' health, the incubator, the wires, feeling impotent as parents, and not feeling that they are able to pick up or touch their babies. As the babies progressed through the NICU and parents had more of a caregiving role and especially once they transitioned home, parents described how their relationship with their baby was more attuned, reciprocal and they described their babies in a more mind-minded manner. Parents learnt to recognise their babies' signals without relying on the machines, and parents reported that their babies responded more to them. Research has found that despite there being differences up to 6 months after birth, the bond and

attachment security are equal to full-term babies by 12-18 months (Korja, Latva, & Lehtonen, 2012). Parents with babies on a NICU build their bond slowly, dependent on the health of their baby, and this bond becomes stronger once they have transitioned home.

The current study focused on parents lived experience of building a bond with their baby on NICU and the challenges and support parents require, both being on NICU and once discharged home. The current study builds upon the family centred care approach, which has changed policies to allow parents more access to their babies and ensured each baby is viewed as an individual, taking into consideration cultural beliefs (Gooding et al., 2011). Despite this, parents are still feeling impotent in their parenting abilities, anxious when discharged and needing more support through the traumatic experiences. The current research highlights that parents are going through a traumatic experience and will need extra support in being around their babies initially and doing their cares. Clinical psychology input has the benefit of supporting parent and baby bonding, helping parents cope with the conflicting emotions and process trauma when ready while supporting the medical staff in day to day intervention (McKenzie-McHarg et al., 2016). The current study indicates how important psychological support is once the baby has been discharged as parents begin reflecting on their traumatic journey, and in continuing on building their bond and confidence as parents.

### **Implications for clinical practice**

The current study highlights the importance of family centred care in the NICU (Ramezani, Shirazi, Sarvestani, & Moattari, 2014), but more focus is required on parents and babies building a bond. The current study emphasises that parents experienced the process of the NICU as highly traumatic but may be too detached and

in ‘survival mode’ to acknowledge those feelings at the time. Parents need support to be with, hold, comfort and do the ‘cares’ for their babies especially in the first few weeks. It might be helpful to screen parents for trauma symptoms and difficulties with bonding both pre and post discharge. Clinical psychologists hold a unique role as they are able to hold in mind the needs of the baby and the parents’ own mental health, as well as supporting staff in helping parents in the early stages when they are not ready to access therapy, but need support to bond and be attuned with their baby. Once babies are discharged, extra psychological support is required as this is when parents’ mental health might decline as they feel safe to process the experiences they have been through similar to a country-wide survey (The smallest things, 2017). The British Psychological Society recommend that for every 3000 babies born in a maternity hospital with a NICU, a half-time clinical psychologist is required (McKenzie-McHarg et al., 2016), the current research support this need and highlights that possibly more is required. Additional training is required to collaboratively provide support between NICU and community care to improve the transition home and long-term support (The smallest things, 2017). These clinical implications are all supported by a recent national survey highlighting the importance of available, adequate and timely support for parents (The smallest things, 2017).

### **Methodological considerations**

IPA allows the data to be analysed in detail of how individuals make sense of their lived experiences (Smith et al., 2009). The small sample size is an advantage as it allowed for each parent’s experience to be analysed in detail. Despite the small sample size, nearly all parents contributed to each of the themes (97%) and the sample contained different ethnic populations. It is unlikely that the sample is representative of



all parents especially as all the data were collated from one inner city hospital. Despite measures taken to increase triangulation, in IPA the analysis and interpretation are reliant on the researcher's interpretative stance. However, several measures were included in the study to increase triangulation, such as double coding, and seeking participant (parental) feedback on the themes derived, but this study did not gain feedback from psychologists independent of the research. IPA methodology has captured a real lived parental experience of building a bond with their baby on the NICU. Another limitation of the study is the short term nature of the follow-up, so not knowing how parents find building a bond past this.

### **Future research**

Future research that follows up parents once the infant is 12-18 months old is needed to gain parents experiences once they have been the main caregiver for an extended period and to see how they found building the bond with the infant over this time. Research Future research is also needed on how staff can support parents to feel more connected to their babies in the NICU.

## **References**

- Adama, E. A., Bayes, S., & Sundin, D. (2016). Parents' experiences of caring for preterm infants after discharge from Neonatal Intensive Care Unit: A meta-synthesis of the literature. *Journal of Neonatal Nursing*, 22(1), 27–51.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1971). Individual Differences in Strange-Situational Behaviour of One-Year-Olds. Retrieved from <http://eric.ed.gov/?id=ED056742>
- Alcorn, K. L., O'Donovan, A., Patrick, J. C., Creed, D., & Devilly, G. J. (2010). A prospective longitudinal study of the prevalence of post-traumatic stress disorder resulting from childbirth events. *Psychological Medicine*, 40(11), 1849–1859.
- Alhusen, J. L., Hayat, M. J., & Gross, D. (2013). A longitudinal study of maternal attachment and infant developmental outcomes. *Archives of Women's Mental Health*, 16(6), 521–529.
- Al Maghaireh, D. F., Abdullah, K. L., Chan, C. M., Piaw, C. Y., & Al Kawafha, M. M. (2016). Systematic review of qualitative studies exploring parental experiences in the Neonatal Intensive Care Unit. *Journal of Clinical Nursing*, 25(19–20), 2745–2756.
- Anisfeld, E., & Lipper, E. (1983). Early contact, social support, and mother-infant bonding. *Pediatrics*, 72(1), 79–83.
- Beck, C. T. (2004). Mothers with post-traumatic stress disorder after traumatic childbirth struggled to survive and experienced nightmares, flashbacks, anger, anxiety, depression and isolation. *Nursing Research*, 53, 216–224.
- Bialoskurski, M., Cox, C. L., & Hayes, J. (1999). The nature of attachment in a neonatal intensive care unit. *Journal Perinatal Neonatal Nursing*, 13(1), 66–77.

- Bicking Kinsey, C., & Hupcey, J. E. (2013). State of the science of maternal-infant bonding: a principle-based concept analysis. *Midwifery*, 29(12), 1314–1320.
- Bowlby, J. (1988). *A secure base: clinical applications of attachment theory*. London: Routledge.
- Bowlby, J. (2005). *A secure base: clinical applications of attachment theory*. London; New York: Routledge.
- Bystrova, K., Ivanova, V., Edhborg, M., Matthiesen, A.-S., Ransjö-Arvidson, A.-B., Mukhamedrakhimov, R., ... Widström, A.-M. (2009). Early contact versus separation: effects on mother–infant interaction one year later. *Birth*, 36(2), 97–109.
- Coppola, G., Cassibba, R., & Costantini, A. (2007). What can make the difference? *Infant Behavior and Development*, 30(4), 679–684.
- Darvill, R., Skirton, H., & Farrand, P. (2010). Psychological factors that impact on women’s experiences of first-time motherhood: a qualitative study of the transition. *Midwifery*, 26(3), 357–366.
- Davis, L., Edwards, H., Mohay, H., & Wollin, J. (2003). The impact of very premature birth on the psychological health of mothers. *Early Human Development*, 73(1–2), 61–70.
- Fegran, L., Helseth, S., & Fagermoen, M. S. (2008). A comparison of mothers’ and fathers’ experiences of the attachment process in a neonatal intensive care unit. *Journal of Clinical Nursing*, 17(6), 810–816.
- Feldman, R., Weller, A., Leckman, J. F., Kuint, J., & Eidelman, A. I. (1999). The nature of the mother’s tie to her infant: Maternal bonding under conditions of proximity, separation, and potential loss. *Journal of Child Psychology and Psychiatry*, 40(6), 929–939.

- Feldner, M. T., Monson, C. M., & Friedman, M. J. (2007). A Critical Analysis of Approaches to Targeted PTSD Prevention: Current Status and Theoretically Derived Future Directions. *Behavior Modification*, 31(1), 80–116.
- Ferber, S. G., Feldman, R., Kohelet, D., Kuint, J., Dollberg, S., Arbel, E., & Weller, A. (2005). Massage therapy facilitates mother–infant interaction in premature infants. *Infant Behavior and Development*, 28(1), 74–81.
- Glass, H. C., Costarino, A. T., Stayer, S. A., Brett, C. M., Cladis, F., & Davis, P. J. (2015). Outcomes for Extremely Premature Infants: *Anesthesia & Analgesia*, 120(6), 1337–1351.
- Gooding, J. S., Cooper, L. G., Blaine, A. I., Franck, L. S., Howse, J. L., & Berns, S. D. (2011). Family Support and Family-Centered Care in the Neonatal Intensive Care Unit: Origins, Advances, Impact. *Seminars in Perinatology*, 35(1), 20–28.
- Guillaume, S., Michelin, N., Amrani, E., Benier, B., Durrmeyer, X., Lescure, S., ... others. (2013). Parents' expectations of staff in the early bonding process with their premature babies in the intensive care setting: a qualitative multicenter study with 60 parents. *BMC Pediatrics*, 13(1), 18.
- Hornstein, C., Trautmann-Villalba, P., Hohm, E., Rave, E., Wormann-Fleischer, S., & Schwarz, M. (2006). Maternal bond and mother-child interaction in severe postpartum psychiatric disorders: is there a link? *Archive of Womens Mental Health*, 9, 279–284.
- Kavlak, O., & Sirin, A. (2007). Maternal and paternal attachment and the role of nurse. *Journal of Ege University School of Nursing*, 23, 183–194.
- Kim, W. J., Lee, E., Kim, K. R., Namkoong, K., Park, E. S., & Rha, D. W. (2015). Progress of PTSD symptoms following birth: a prospective study in mothers of high-risk infants. *Journal of Perinatology*, 35(8), 575–579.

- Korja, R., Latva, R., & Lehtonen, L. (2012). The effects of preterm birth on mother-infant interaction and attachment during the infant's first two years: Preterm birth and mother-infant relationship. *Acta Obstetrica et Gynecologica Scandinavica*, 91(2), 164–173.
- McKenzie-McHarg, K., Scott-Heyes, G., Slade, P., Burns, J., Jones, H., McGuinness, M., ... Wittkowski, A. (2016). *Perinatal Service Provision: The role of Perinatal Clinical Psychology*. British Psychological Society.
- Meins, E. (2013). Sensitive attunement to infants' internal states: operationalizing the construct of mind-mindedness. *Attachment & Human Development*, 15(5–6), 524–544.
- Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants mental processes predict security of attachment at 12 months. *Journal of Child Psychiatry*, 42(5), 637–648.
- Murdoch, M. R., & Franck, L. S. (2012). Gaining confidence and perspective: a phenomenological study of mothers' lived experiences caring for infants at home after neonatal unit discharge: Gaining confidence and perspective. *Journal of Advanced Nursing*, 68(9), 2008–2020.
- Nelson, A. M. (2003). Transition to Motherhood. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, 32(4), 465–477.
- NICE Guidelines. (2010). *Neonatal specialist care*. National institute for health and care excellence.
- Obeidat, H. M., Bond, E. A., & Callister, L. C. (2009). The Parental Experience of Having an Infant in the Newborn Intensive Care Unit. *Journal of Perinatal Education*, 18(3), 23–29.

- Ramezani, T., Shirazi, Z. H., Sarvestani, R. S., & Moattari, M. (2014). Family-centered care in neonatal intensive care unit: a concept analysis. *International Journal of Community Based Nursing and Midwifery*, 2(4), 268.
- Saigal, S., & Doyle, L. W. (2008). An overview of mortality and sequelae of preterm birth from infancy to adulthood. *The Lancet*, 371(9608), 261–269.
- Salisbury, A., Law, K., LaGasse, L., & Lester, B. . (2003). Maternal-fetal attachment. *JAMA*, 13, 1701.
- Shah, P. E., Clements, M., & Poehlmann, J. (2011). Maternal Resolution of Grief After Preterm Birth: Implications for Infant Attachment Security. *PEDIATRICS*, 127(2), 284–292.
- Smith, J. A., Flowers, P., & Larkin, M. (2009). *Interpretative phenomenological analysis: theory, method and research*. Los Angeles: SAGE.
- The smallest things. (2017). *Life after neonatal care*.
- Tooten, A., Hoffenkamp, H. N., Hall, R. A., Braeken, J., Vingerhoets, A. J., & Bakel, H. J. (2013). Parental perceptions and experiences after childbirth: a comparison between mothers and fathers of term and preterm infants. *Birth*, 40(3), 164–171.
- Twohig, A., Reulbach, U., Figuerdo, R., McCarthy, A., McNicholas, F., & Molloy, E. J. (2016). SUPPORTING PRETERM INFANT ATTACHMENT AND SOCIOEMOTIONAL DEVELOPMENT IN THE NEONATAL INTENSIVE CARE UNIT: STAFF PERCEPTIONS: Preterm Infant Attachment: NICU Staff Perceptions. *Infant Mental Health Journal*, 37(2), 160–171.
- Watson, G. (2011). Parental liminality: a way of understanding the early experiences of parents who have a very preterm infant: Parental liminality: parents of very preterm infants. *Journal of Clinical Nursing*, 20(9–10), 1462–1471.

WHO | Children: reducing mortality. (2016). Retrieved 15 April 2017, from

<http://www.who.int/mediacentre/factsheets/fs178/en/>

WHO | Preterm birth. (2016). Retrieved 15 April 2017, from

<http://www.who.int/mediacentre/factsheets/fs363/en/>

## **Public Dissemination Document**

This thesis was submitted to fulfil part of the requirements of a Doctorate in Clinical Psychology. This document summarises both sections of Volume I, which includes a literature review and an empirical paper.

### **Does parental mind-mindedness in the first year of a child's life link to outcomes in pre-school aged children?**

Mind-mindedness (MM, Meins, 1997; Meins, Fernyhough, Fradley, & Tuckey, 2001) is defined as a parents ability to appropriately comment on what their infant is thinking or feeling (Meins, 2013). Previous research has found that MM may be more consistent at predicting attachment security (Meins et al., 2001) than caregiver sensitivity (De Wolff, & Van IJzendoorn, 1997). The aim of the systematic review was to collate the available literature, review the quality of the literature and to assess whether there is an association with MM and different developmental outcomes before the child starts year one at school. The systematic search found that 20 papers met the inclusion criteria and were assessed for their quality.

The results of the review showed that MM significantly predicted outcomes of infant attachment security, theory of mind, cognitive and language development, sleep, feeding and internalising and externalising behaviours, but the results were not conclusive. MM appeared to be more significant than caregiver sensitivity at predicting the developmental outcomes of an infant, but the literature is still uncertain as to whether MM is a pre-requisite to caregiver sensitivity or whether they are independent constructs. MM was found to be a stable construct over time. MM is a relatively new construct and more research is required, including assessing the influences on older



children's outcomes. Due to the short assessment time of MM, it could be useful in predicting child outcomes in at-risk infants.

**A study to explore how parents of a very or extremely preterm baby, who require support from the NICU, find building a relationship with their baby before and after being discharged home.**

As the survival rates of premature babies is increasing more parents are experiencing them being cared for in Neonatal Intensive Care Unit (NICU). The parental role on NICU is paramount but parents often experience increased stress, feel incompetent and it is an emotionally distressing time (Davis, Edwards, Mohay, & Wollin, 2003; Obeidat, Bond, & Callister, 2009). Previous research has looked at parents experiences of either being on the unit or after being discharged (Adama, Bayes, & Sundin, 2016; Al Maghaireh, Abdullah, Chan, Piaw, & Al Kawafha, 2016; Obeidat et al., 2009). This study focused on exploring parents' lived experience of building a bond with their baby before and after being discharged from the NICU. Parents recruited from a NICU (9 parents) were interviewed before and after their baby was discharged. Interviews focused on how the parents built a bond with their baby. Data was analysed using Interpretative Phenomenological Analysis.

Three themes were identified, highlighting the journey of how parents found building a bond with their baby. (1) '*Feeling lost and found*' shows how parents initially felt 'lost', felt impotent as parents and experienced intense emotions, which they tried to survive by detaching, forgetting or living in the moment. After discharge, parents felt more confident in themselves as parents and in their parenting ability, reflected on their journey and were now surviving. (2) '*This isn't how it's meant to be*' highlights how

parents had missed out on important experiences and connections with their baby and quickly adapted their sense of normality to help cope with NICU. (3) *'Slowly falling in love'* describes how parents are learning know get to know their baby while they are on NICU and their prognosis is unknown. As the baby's health improves parents get to know them better and start building the bond, this continues especially once the baby has been discharged home.

Parents' experiences highlight how traumatic having a preterm baby on NICU was and how parents struggled initially to bond with their baby. The current study highlights the importance of family centred care in the NICU (Ramezani, Shirazi, Sarvestani, & Moattari, 2014), but more focus is required on parents and their babies building a bond. Clinical psychologists hold a unique role as they are able to hold in mind the needs of the baby and the parents' own mental health as well as supporting staff in helping parents in the early stages when they are not ready to access therapy, but need support to bond and be attuned with their baby. Once babies are discharged extra psychological support is required as this is when parents' mental health might decline as they feel safe to process the experiences they have been through (The smallest things, 2017).

## References

- Adama, E. A., Bayes, S., & Sundin, D. (2016). Parents' experiences of caring for preterm infants after discharge from Neonatal Intensive Care Unit: A meta-synthesis of the literature. *Journal of Neonatal Nursing*, 22(1), 27–51.
- Al Maghaireh, D. F., Abdullah, K. L., Chan, C. M., Piaw, C. Y., & Al Kawafha, M. M. (2016). Systematic review of qualitative studies exploring parental experiences in the Neonatal Intensive Care Unit. *Journal of Clinical Nursing*, 25(19–20), 2745–2756. <https://doi.org/10.1111/jocn.13259>
- Davis, L., Edwards, H., Mohay, H., & Wollin, J. (2003). The impact of very premature birth on the psychological health of mothers. *Early Human Development*, 73(1–2), 61–70.
- De Wolff, M. S., & Van IJzendoorn, M. H. (1997). Sensitivity and attachment: A meta-analysis on parental antecedents of infant attachment. *Child Development*, 68, 571–591.
- Meins, E. (1997). *Security of attachment and the social development of cognition*. East Sussex, UK: Psychology Press.
- Meins, E. (2013). Sensitive attunement to infants' internal states: operationalizing the construct of mind-mindedness. *Attachment & Human Development*, 15(5–6), 524–544.
- Meins, E., Fernyhough, C., Fradley, E., & Tuckey, M. (2001). Rethinking maternal sensitivity: Mothers' comments on infants mental processes predict security of attachment at 12 months. *Journal of Child Psychiatry*, 42(5), 637–648.

Obeidat, H. M., Bond, E. A., & Callister, L. C. (2009). The Parental Experience of Having an Infant in the Newborn Intensive Care Unit. *Journal of Perinatal Education*, 18(3), 23–29.

Ramezani, T., Shirazi, Z. H., Sarvestani, R. S., & Moattari, M. (2014). Family-centred care in neonatal intensive care unit: a concept analysis. *International Journal of Community Based Nursing and Midwifery*, 2(4), 268.

The smallest things. (2017). *Life after neonatal care*.

## Appendix 1: Ethical approval letter



**West Midlands - Black Country Research Ethics Committee**  
Royal Standard Place  
Nottingham  
NG1 6FS

21 April 2016

Miss Andrea Ellis  
Clinical Psychologist in Training  
Birmingham and Solihull Mental Health Trust  
School of Psychology  
University of Birmingham  
Edgbaston  
B15 2TT

Dear Miss Ellis

|                  |  |
|------------------|--|
| Study title:     | A study exploring how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit. |
| REC reference:   | 16/WM/0146   |
| Protocol number: | ERN_15-1356  |
| IRAS project ID: | 195266   |

Thank you for your letter of 15 April 2016, responding to the Committee's request for further information on the above research and submitting revised documentation.

The further information has been considered on behalf of the Committee by the Chair.

We plan to publish your research summary wording for the above study on the HRA website, together with your contact details. Publication will be no earlier than three months from the date of this opinion letter. Should you wish to provide a substitute contact point, require further information, or wish to make a request to postpone publication, please contact the REC Manager, Miss Georgia Copeland, [nrescommittee.westmidlands-blackcountry@nhs.net](mailto:nrescommittee.westmidlands-blackcountry@nhs.net).

### Confirmation of ethical opinion

On behalf of the Committee, I am pleased to confirm a favourable ethical opinion for the above research on the basis described in the application form, protocol and supporting documentation as revised, subject to the conditions specified below.

### Conditions of the favourable opinion

The REC favourable opinion is subject to the following conditions being met prior to the start of the study.

Management permission must be obtained from each host organisation prior to the start of the study at the site concerned.

*Management permission should be sought from all NHS organisations involved in the study in accordance with NHS research governance arrangements. Each NHS organisation must confirm through the signing of agreements and/or other documents that it has given permission for the research to proceed (except where explicitly specified otherwise).*

*Guidance on applying for NHS permission for research is available in the Integrated Research Application System, [www.hra.nhs.uk](http://www.hra.nhs.uk) or at <http://www.rtforum.nhs.uk>*

*Where a NHS organisation's role in the study is limited to identifying and referring potential participants to research sites ("participant identification centre"), guidance should be sought from the R&D office on the information it requires to give permission for this activity.*

*For non-NHS sites, site management permission should be obtained in accordance with the procedures of the relevant host organisation.*

*Sponsors are not required to notify the Committee of management permissions from host organisations*

### Registration of Clinical Trials

All clinical trials (defined as the first four categories on the IRAS filter page) must be registered on a publically accessible database within 6 weeks of recruitment of the first participant (for medical device studies, within the timeline determined by the current registration and publication trees).

There is no requirement to separately notify the REC but you should do so at the earliest opportunity e.g. when submitting an amendment. We will audit the registration details as part of the annual progress reporting process.

To ensure transparency in research, we strongly recommend that all research is registered but for non-clinical trials this is not currently mandatory.

If a sponsor wishes to contest the need for registration they should contact Catherine Blewett ([catherineblewett@nhs.net](mailto:catherineblewett@nhs.net)), the HRA does not, however, expect exceptions to be made. Guidance on where to register is provided within IRAS.

**It is the responsibility of the sponsor to ensure that all the conditions are complied with before the start of the study or its initiation at a particular site (as applicable).**

### **Ethical review of research sites**

NHS sites

The favourable opinion applies to all NHS sites taking part in the study, subject to management permission being obtained from the NHS/HSC R&D office prior to the start of the study (see "Conditions of the favourable opinion" below).

Non-NHS sites

#### Approved documents

The final list of documents reviewed and approved by the Committee is as follows:

| Document   | Version | Date             |
|--|---------|------------------|
| Evidence of Sponsor Insurance or indemnity (non NHS Sponsors only) [Letter of Insurance] | 1       | 01 March 2016    |
| Interview schedules or topic guides for participants [Topic guidance first interview]    | 1       | 15 February 2016 |
| IRAS Checklist XML [Checklist_04032016]  |         | 04 March 2016    |
| IRAS Checklist XML [Checklist_18042016]  |         | 18 April 2016    |
| Letter from sponsor [Confirmation of Sponsorship]  | 1       | 01 March 2016    |
| Letters of invitation to participant [Participant invitation letter]                     | 1       | 15 February 2016 |
| Other [Supervisor CV Ruth Butterworth]   | 1       | 25 January 2016  |
| Other [Topic guidance second interview]  | 1       | 15 February 2016 |
| Other [Topic guidance 12 month follow up]  | 1       | 15 February 2016 |
| Other [Email clarification from AE]  |         | 08 March 2016    |
| Other [Independent Review]   | 1       | 15 February 2016 |
| Other [Consent form 12 month follow up]  | 1       | 08 April 2016    |
| Participant consent form [Consent form V2]   | 2       | 08 April 2016    |
| Participant consent form [Participant consent form v2 track changes]                     | 2       | 08 April 2016    |
| Participant Information sheet (PIS) [Participant Information Sheet V2]                   | 2       | 08 April 2016    |
| Participant Information sheet (PIS) [Participant Information Sheet V2 track changes]     | 2       | 08 April 2016    |
| REC Application Form [REC_Form_04032016]   |         | 04 March 2016    |
| Research protocol or project proposal [Study Protocol]                                   | 1       | 15 February 2016 |
| Response to Request for Further Information [letter]                                     |         | 15 April 2016    |
| Summary CV for Chief Investigator (CI) [Chief Investigator CV]                           | 1       | 25 January 2016  |
| Summary CV for supervisor (student research) [Gary Law CV]                               | 1       | 25 January 2016  |

#### Statement of compliance

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

#### After ethical review

##### Reporting requirements

The attached document "*After ethical review – guidance for researchers*" gives detailed guidance on reporting requirements for studies with a favourable opinion, including:

- Notifying substantial amendments

- Adding new sites and investigators
- Notification of serious breaches of the protocol
- Progress and safety reports
- Notifying the end of the study

The HRA website also provides guidance on these topics, which is updated in the light of changes in reporting requirements or procedures.

#### **User Feedback**

The Health Research Authority is continually striving to provide a high quality service to all applicants and sponsors. You are invited to give your view of the service you have received and the application procedure. If you wish to make your views known please use the feedback form available on the HRA website:

<http://www.hra.nhs.uk/about-the-hra/governance/quality-assurance/>

#### **HRA Training**

We are pleased to welcome researchers and R&D staff at our training days – see details at

<http://www.hra.nhs.uk/hra-training/>

|                   |   |
|-------------------|---|
| <b>16/WM/0146</b> | <b>Please quote this number on all correspondence</b> |
|-------------------|---|

With the Committee's best wishes for the success of this project.

Yours sincerely



**Dr Hilary Paniagua**  
**Chair**

Email: [nrescommittee.westmidlands-blackcountry@nhs.net](mailto:nrescommittee.westmidlands-blackcountry@nhs.net)

Enclosures: "After ethical review – guidance for researchers"

Copy to: *Dr Sean Jennings*

*Ms Kelly Hard* 



**Appendix 2: Participant invitation letter**

*Title of Project:* A research study to look at how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit

*Researcher:*

Dear Parents,

I am ... and I am currently studying for a doctorate in Clinical Psychology at the University of .... I would like to invite you to take part in a research study. Before you decide whether you are interested in taking part, included with this letter is more information about why this research is being done and what it would involve for yourself. Please take the time to read the information leaflet carefully and ask if there is anything that you do not understand or if you have any questions.

**What will happen to me if I agree to take part?**

If you agree to take part you can either contact myself, or pass your details on to ..., the research nurse, and I will contact you. I will then meet with you to answer any questions and, if you decide to take part, to complete the consent form.

If you are interested in taking part, either contact ... directly (information below) or request your details are passed on by ... or ... (research nurse).

Thank you for taking the time to read this letter and the information sheet.

Kind regards

Researcher

### **Appendix 3: Participant information sheet**

*Title of Project:* A research study to look at how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit

*Researcher:*

- What is the purpose of this research?

Having a baby on the NICU is a very emotional and difficult time for parents. Due to the medical needs of the baby, many medical professionals are often involved in their care and the outcome can be uncertain. The transition home then brings its own challenges as parents and baby have to adapt to a new environment. This research is trying to explore how parents find forming a relationship with their baby during this challenging time.

This researcher would like to meet with you to discuss your experiences on three occasions: while on NICU, shortly after discharge home, and again in 12-months. At each time point, I will meet with you to conduct an interview to explore your thoughts, feelings and experiences.

- Why have I been invited to take part?

You have been invited to take part as you meet the following inclusion criteria and your nurse feels you will be appropriate to take part in the study and you have a valuable journey to tell.

- What does taking part involve?

The location of the study can be at a location and venue to suit you. The research interviews will last approximately 1 hour 30 minutes. The first interview will be before your baby is discharged, and the second interview will be 6-10 weeks following discharge. There is also a follow up interview 12 months after discharge which will last approximately 1 hour 30 minutes. The interviews will be between you and one member of the research team only.

- What will happen if I do not want to carry on with the study?

If you do not want to take part, then that is fine – you do not need to do anything. Alternatively, if you have taken part in a research interview and later you would to stop taking part in the research then you simply tell me and I will withdraw you from the study. The care that you and your baby receive will remain exactly the same. If you have taken part in an interview, then I will type that interview up into a transcript and send it to you. Once you have received the transcript you will have two weeks to contact me if you want to have any quotes removed from the research analysis or withdraw the whole transcript. If I do not hear from you within two-weeks, then I will assume that you are happy for your transcript to be included in the research analysis and project write-up.

- Benefits of taking part

Being able to talk through an experience can help to process the emotions and experiences that you have had. It is an understandably difficult time and you may find it beneficial to talk to someone in a confidential manner.

We hope that that a better understanding of parents' journeys can be gathered from this research. These experiences can then be used to help future parents who might be in a similar situation and help to inform practice on the ward.

- Risks of taking part

Talking about your experiences can be emotive and sometimes uncomfortable. You will be able to pause the interview at any point and then either continue when you are ready or discontinue and withdraw from the study. If you want to talk in more depth or receive additional support, you can choose to self-refer to ..., Clinical Psychologist on the unit (details below)

- Places to access support
  - Clinical Psychologist on NICU ward
  - Bliss, Charity Organisation
    - 0500 618140
    - [www.bliss.org.uk](http://www.bliss.org.uk)
- Will my taking part in the study be kept confidential?

Your participation will be kept confidential. No names or identifiable information will be included in the research. However, due to the personal experiences shared and quotes being used in the project write-up, it is possible that your partners or close family/friends may recognise a quote or experience - I will be mindful on the quotes used and all measures will be taken to ensure that you are not identifiable. You will be sent your transcript and have two weeks to read and reflect on it. Any quotes can be removed if you do not want them to be included or it can be completely withdrawn if you inform me before the end of the two week period.

- What will happen if safeguarding concerns are raised?

If during your interviews, significant concerns are raised about either the safety of yourself or someone else, the researcher has a duty of care to follow the ...Hospital safeguarding policy and report the concerns to the appropriate safeguarding team. You will be kept informed of the process. For more information of safeguarding please see [...](#)

- Will the staff on the ward know I am taking part?

I will ask you to give permission/consent for me/research team to contact your key worker on the ward before the second interview and before I contact you to ascertain how you and your baby are. Withdrawing or not taking part in the research will not have any effect on your baby's treatment.

- How will the transcripts be stored?

The information you provide will be stored on a password protected computer system and it will be coded (identifiable information will be removed). The audio transcripts will be destroyed once the degree for which this research is being conducted has been awarded. At the end of the research, the anonymised transcripts will be stored in a secure location at ... University and then destroyed after 10 years.

- Expenses and payments

Public transport or parking costs can be reimbursed for the times/duration of the interviews.

- What will happen to the results of the research study?

The research will be written up as part of my doctoral thesis. It will be confidential, all names and identifiable information will be removed. The results of the study will be submitted for publication in a scientific journal. A summary copy of the study and its findings will be given to the NICU unit. If you would like a summary copy of the study, I can send you a copy. .

- Ethics

This study is being completed as part of a Clinical Psychology Doctorate at the University of .... The study has been given approval by a Research Ethics Committee.

If you have any queries or concerns about this research, then you can also contact the Patient Advice and Liaison Service (PALS), , who will be able to help.

PALS contact:

- What happens if I have any further concerns?

If you have any concerns please contact me on the information provided and I will try and answer any questions. Alternatively, you can contact any of the three research supervisors listed below.

If you are interested in taking part, either contact ... directly (information below) or request your details are passed on by ... or ... (research nurse).

#### Appendix 4: Consent form

Research site:  
Study Number:  
Participant Identification Number:

*Title of Project:* A research study to look at how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit

*Researcher:* ...

Please initial box

1. I confirm that I have read and understood the information sheet (version 2, 8.04.16) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time during the research interview, or within two weeks of receiving the interview transcript, without giving any reason, and without my own or my baby's medical/social care or legal rights being affected. ☐
3. I consent to staff on the NICU at Hospital knowing I am taking part in the study so the researcher can contact the Hospital before the interviews to ascertain the health of myself and baby before contacting me. ☐
4. I consent to being contacted for the  
  
a. Second interview ☐  
  
b. 12 month follow-up study ☐
5. I agree to take part in the above study. ☐

.....  
Name of participant

.....  
Date

.....  
Signature

.....  
.....  
Name of researcher taking consent

.....  
Date

Signature

**Contact Details**

Address

---

---

---

Email

---

Telephone

---

For the 12-month interview, it would be helpful if you could provide the contact details for two relatives or friends whom we could contact if your contact details were to change.

Name.....  
Relationship to your family.....  
Telephone number.....

Name.....  
Relationship to your family.....  
Telephone number.....

### **Appendix 5: Topic guidance/questions first interview**

*Title of Project:* A research study to look at how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit

*Researcher:,*

#### **First Interview**

Pregnancy – Gaining information and feelings surrounding the pregnancy

- Can you tell me about your pregnancy with \_\_\_\_?

*Sub-topic*

- What was your experience of your pregnancy with \_\_\_\_\_?
- When were you first aware of any complications?
- Did you feel prepared?

Birth

- Can you explain to me the experience of \_\_\_\_\_'s birth?
- Can you tell me about what it was like when you first saw \_\_\_\_\_?

*Sub-topic*

- How did you feel when you first saw \_\_\_\_\_?
- When were you able to hold or touch \_\_\_\_\_?

Post-birth

- Can you tell me the story of what happened following the birth as you remember it?

*Sub-topic*

- When were you first able to hold or touch \_\_\_\_\_?
- How were you first communicated with about the health of your baby and how were you feeling?
- What was helpful or not helpful?
- Did you understand what was going on with your baby?
- Were you able to interact with your baby?
- Were you able to partake in kangaroo care?
- Did you feel close to \_\_\_\_\_?
- What helped you feel a bond/close to \_\_\_\_\_?

Now

- How would you describe your relationship with \_\_\_\_\_ now?

*Sub-topic*

- What is your experience of your baby now?
- What have staff done that has helped/not helped?
- Have staff helped you to interact and care for \_\_\_\_\_?
- Do you feel like you know what \_\_\_\_\_ wants and needs?
- Do you feel a connection with \_\_\_\_\_? When did you first feel this connection?  
How did you find feeling this?

Going home

- How do you feel about going home with \_\_\_\_\_?

*Sub-topic*

- Can you tell me what you are looking forward to about going home?
- Is there anything you are worried about taking \_\_\_\_\_ home?
- Do you feel supported in going home?
- Do you feel ready to go home?
- What are you looking forward to when you go home?
- What are your hopes and fears for the future?



## **Appendix 6: Topic guidance/questions second interview**

*Title of Project:* A research study to look at how parents with a baby in the neonatal intensive care unit (NICU) find building a relationship with their baby before and after leaving the unit

*Researcher:*

### **Second interview**

Getting home

- Can you tell me the story of how it was bringing \_\_\_\_ home for the first time?

*Sub-topic*

- When were you first told you could go home? How did you feel?
- How did you experience going home?
- How was leaving the hospital?
- How was the journey home?
- How did you find not having the medical team around 24/7?

First night

- How was the first night at home?

*Sub-topic*

- Was it what you expected?

Being at home

- How do you feel about your relationship with \_\_\_\_\_?

*Sub-topic*

- Do you have much of a routine with \_\_\_\_\_?
- How do you manage parental stress?
- What are your hopes and fears for the future?

Looking back on hospital

- Looking back at your time in hospital how do you remember it?

*Sub-topic*

- Is there anything that you did during this time that you would change?
- What advice would you give to someone going through a similar situation?

**Appendix 7: A table to show which parents contributed to each theme**

| Family No. | Name     | Which parents contributed to which themes |                       |                          |                                 |                  |                                      |                               |
|------------|----------|---|-----------------------|--------------------------|---------------------------------|------------------|--------------------------------------|-------------------------------|
|            |          | Feeling lost and found                    |                       |                          | This isn't how it's meant to be |                  | Slowly falling in love               |                               |
|            |          | Impotence to confidence in parenting      | Survival to surviving | What to do? How to feel? | Altered normality               | Lost connections | Knowing me, knowing you, knowing us. | Living and loving on the edge |
| 1          | Dexter   | Yes                                       | Yes                   | No                       | No                              | Yes              | Yes                                  | Yes                           |
|            | Zoe      | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 2          | Jodie    | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 3          | Prisha   | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 4          | Luke     | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
|            | Amelia   | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 5          | Keya     | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 6          | Amy      | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |
| 7          | Danielle | Yes                                       | Yes                   | Yes                      | Yes                             | Yes              | Yes                                  | Yes                           |